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Regulatory approximation under ALECA: assessing the economic and social effects on the Tunisian agricultural sector

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EXECUTIVE SUMMARY

The negotiations on a deep and comprehensive free trade area (DCFTA) between Tunisia and the European Union (EU) have been ongoing since 2015. Better known by its French acronym – *Projet d'accord de libre-échange complet et approfondi* (ALECA) – the agreement aims for an ambitious liberalisation of trade and investment in order to integrate Tunisia's economy further into the EU single market.

One area that has generated particular attention in the Tunisian debate is the agricultural sector, for which the ALECA agreement has multiple implications. Beyond the bilateral reduction of tariffs and quotas, the key EU proposal for achieving better economic integration is the regulatory alignment (or approximation) of Tunisian legislation to EU regulatory standards. Such one-sided regulatory alignment implies, however, substantial burdens for Tunisian agricultural and food producers in adjusting production processes to ensure compliance with EU regulations, an adjustment that, in principle, applies to both companies exporting to the EU and companies producing for the domestic market only.

While standard trade impact assessments treat regulatory adjustment as a reduction of trade costs, which generates benefits from liberalisation, the costs of compliance with public regulations and private standards are often side-lined. Previous examples of harmonisation to EU regulations in Central and Eastern European countries as part of their EU accession and of regulatory alignment under EU AAs with Ukraine, Moldova and Georgia show, however, that such regulatory changes pose a major challenge for private and public actors in the affected countries. Further, economic effects on value-added, trade, company structure and employment in the agri-food sectors of these countries have been highly mixed, despite substantial financial support by the EU.

In this study, we explicitly consider the costs that Tunisian producers have to incur in the process of regulatory approximation through ALECA. Based on estimations of compliance costs from interviews with Tunisian exporters to the EU, we simulate the effects of regulatory adjustment to EU regulations and private standards in agricultural and food sectors in the ÖFSE Global Trade model. Moreover, the effects of bilateral reductions in tariffs and quotas and potential changes in productivity and NTM trade costs are taken up in interrelated scenarios. With this approach, we are able to provide a more comprehensive picture than previous studies of the multiple implications for the agricultural sector in Tunisia.

Compliance costs

In the first scenario, the effects of compliance costs are assessed. Alignment of Tunisian regulations to EU standards implies compliance costs for all Tunisian producers in the affected agricultural sectors. As the exploratory survey conducted among Tunisian exporters to the EU has shown, these costs are mainly related to additional employment costs necessary to manage and control the compliance to EU regulations at a company level, as well as to additional requirements for material and services inputs. Moreover, the actual access to the EU market depends not only on compliance with EU public standards but also with private standards demanded by purchasers in the EU, most notably supermarkets.

Total compliance costs related to the implementation of ALECA might cause a decline of **value-added in Tunisian agriculture by -8.3 %**. This is largely related to **adjustments to EU public regulations (value-added -6.5 %)** and partially to **private standards (value-added -1.9 %)**. In particular, additional employment and chemicals inputs are burdensome for Tunisian exporters. Further, **employment (-2.7 %)** and **consumption (-2.5 %)** in the Tunisian agricultural sectors are adversely affected. For the Tunisian economy as a whole, **GDP shrinks by -1.0 %** due to the changes in the agricultural sectors.

Tariff liberalisation & Compliance costs

In the second scenario, the effects of tariff liberalisation are assessed in addition to the effects of compliance costs. **Unilateral tariff and quota reduction by the EU** would lead to increased exports from Tunisia but would not compensate for the negative effects of compliance costs. By accounting for compliance costs, **value-added in agriculture still decreases by -6.0 %**. The effect depends strongly on the **removal of EU quotas for olive oil**, as shown by a sensitivity analysis with a more conservative assumption on the trade barrier posed by the EU quota, in which **agricultural value-added declines by -7.6 %**.

The additional reduction of Tunisian tariffs for agricultural imports leads to a further contraction of **value-added in the Tunisian agricultural sector by -10.9 %** and to a **deterioration of the public balance by -0.59 %-points relative to GDP** when Tunisian tariffs are fully removed. Even when average **Tunisian agricultural tariffs are lowered only by 50 %**, the overall effect would still be negative with **-9.0 % in agricultural value-added** (and -0.22 %-points for the public balance), as sectors that primarily produce for the domestic market are strongly affected.

Full market access

In the third scenario, productivity effects and the effects of a reduction of border NTMs are also considered. These factors are typically seen as benefits from trade liberalisation under DCFTAs. **Labour productivity in Tunisian agriculture would, however, need to increase by 15 % relative to EU productivity changes** to achieve overall positive effects for value-added in the agricultural sectors (**+1.2 %**). At the same time, this would cause a **reduction in employment of -7.9 %**. The positive effects rely on a significant expansion of exports in the sectors 'vegetable oils' and 'vegetables & fruits'.

Full regulatory alignment by Tunisia would also facilitate procedures at the border and thereby reduce trade costs. However, Tunisia would only benefit from a strong asymmetric cost reduction in favour of Tunisian exports, which seems unlikely.

Overall, the simulation results show that the implications from ALECA represent a major challenge for Tunisian agriculture and the economy as a whole. The effects of compliance costs to approximate EU regulations and private standards by EU buyers are burdensome for Tunisian producers and create adverse outcomes in value-added and employment in the agricultural sectors. The effects are amplified with tariff liberalisation, which also depresses public revenues. An implementation of ALECA calls into question the current agricultural policy regime, as sectoral outcomes show that Tunisian sectors primarily oriented to serve the local market such as 'meat' or 'dairy' are strongly affected. Positive effects from ALECA require a strong increase in productivity to compensate for the negative effects of regulatory adjustment and to create positive export effects. Productivity increases are, however, hard to achieve in the first place, as the examples of Eastern European countries demonstrate, and require substantial financial resources and support.

Policy recommendations

The **key policy recommendations** to Tunisian policy-makers are: (i) Assess implementation costs in a comprehensive and systematic manner; (ii) Insist on highly asymmetric market opening; (iii) Avoid regulatory alignment for the entire agricultural sector and restrict regulatory changes on export-oriented products only; (iv) Focus on increasing value-added of agricultural exports, in particular by requesting the elimination of the EU quota on olive oil; (v) Address downside risks for agricultural smallholders through comprehensive policies and support tailored to their needs; (vi) Strengthen institutional capacities of public regulators within a context-specific reform of SPS standards; and (vii) Define the role of trade liberalisation within a framework of sustainable agricultural development.

1. CONTEXT OF THE ALECA NEGOTIATIONS

1.1. The Economic Situation of Tunisia

Tunisia had experienced a period of stable economic growth up to the Arab Spring in 2011, with GDP growth rates averaging 5 % in the 1990s and 4.3 % between 2000 and 2011. Economic performance was mainly driven by the manufacturing and service sectors and the strong influx of foreign investment (WDI data). Improvements in the competitiveness of the Tunisian economy are also reflected by the increasing economic complexity of Tunisian exports as measured by the Economic Complexity Index (ECI). Tunisia improved its country ranking from place 71 in 1995 to place 48 in 2012 and to place 46 in 2018. Thus, Tunisia ranked higher than other comparable Northern African countries, such as Morocco and Egypt, but lower than other middle-income countries such as Malaysia (The Atlas of Economic Complexity 2020).

Since the Arab Spring in 2011, Tunisia has gone through a political transition and has experienced significant social uncertainty and a difficult security situation. Between 2015 and 2019, the economic dynamic slowed down significantly to an average real GDP growth per capita of 1.6 %. The current account deficit widened drastically after 2011 to more than -10 % of GDP in 2017 and 2018 – the highest level since the 1980s, driven also by the strong devaluation of the Tunisian Dinar against the Euro and the US Dollar (Table 1). Moreover, high levels of unemployment (more than 15 % since 2011) and risks in public finances are seen as major challenges for economic recovery. Therefore, substantial financial support has been provided by international institutions, in particular, the IMF and the EU, albeit subject to conditionalities on reforms, for instance, on the tax system and social transfer programs or state-owned enterprises. After a stand-by arrangement in 2013, the IMF approved a USD 2.9 billion Extended Arrangement in 2016, and the EU provided two macro-financial assistance (MFA) programmes of EUR 300 million in loans from 2014 to 2017 and of EUR 500 million in 2016 (European Commission 2020d).

With the COVID-19 crisis in 2020, the outlook for Tunisia worsened again. The IMF expects a GDP decline of 7 % in 2020 and of trade volumes by -27 %, as well as an increase in the government budget deficit to 8 % of GDP. In April 2020, the IMF approved USD 745 million in loans under the Rapid Financing Instrument (IMF 2020). The EU has planned an additional EUR 600 million of loans under MFA (European Commission 2020a), but negotiations on the Memorandum of Understanding had still not been concluded as of the end of February 2021.

Table 1: Key economic indicators of Tunisia

	2010	2011	2013	2015	2017	2019
Nominal GDP (current TND, billion)	63.1	64.5	75.1	84.7	96.3	113.8
Nominal GDP (constant TND, billion)	63.1	61.8	66.2	68.9	71.1	73.7
GDP per capita (constant LCU)	5,929	5,757	6,041	6,167	6,217	6,305
Real GDP growth (annual %)	3.5	1.9	2.9	1.2	1.9	1.0
Inflation, consumer prices (annual %)	3.3	3.2	5.3	4.4	5.3	6.7
Current account (net, % of GDP)	- 4.8	- 7.4	- 8.3	- 8.4	- 9.1	- 8.9
Foreign direct investment, net inflows (% of GDP)	3.0	0.9	2.3	2.2	2.0	2.1
Exchange rate (TND per EUR)	1.9	2.0	2.2	2.2	2.8	3.3

Source: World Bank World Development Indicators (WDI) and ECB

With regard to trade, Tunisia's economic development is largely influenced by the economic outlook of its major trading partners, in particular the EU. The EU remains the major destination for Tunisia's exports in goods despite a decline in its relative importance since 2005 and its largely stagnating export values as compared to 2010 (Table 2 and Table 3). Exports to other countries within the Middle East and Northern Africa (MENA) region have grown in significance, accounting for around 10 % of merchandise exports in 2015. On the import side, the inflow of goods from the EU declined significantly from 70 % in 2005 to 52 % in 2019, while imports from East Asian countries and from within the MENA region have increased in recent years.

Table 2: Tunisian merchandise trade by destination and origin (shares in %)

Exports	2005	2010	2015	2019	Imports	2005	2010	2015	2019
EU-28	80.1	73.3	74.6	73.9	EU-28	69.7	61.2	55.8	51.7
MENA	9.2	10.8	10.8	9.7	MENA	7.7	7.0	7.7	12.0
East Asia	0.7	1.0	1.0	1.4	East Asia	6.6	10.8	12.7	13.5
SSA	1.3	2.4	2.5	2.5	SSA	0.5	0.4	0.5	0.3
North America	1.0	2.5	2.7	2.2	North America	2.7	4.5	3.9	3.7
Eastern Europe	1.7	3.1	1.9	1.9	Eastern Europe	8.0	10.1	12.5	10.4
Others	6.0	7.0	6.5	8.4	Others	4.7	5.9	7.0	8.4

Source: UN Comtrade data

Due to the diversification of imports, Tunisia's trade deficit in goods with the EU declined in absolute terms from EUR 1.7 billion in 2000 to EUR 900 million in 2019. Significant growth in intra-sectoral trade in electronic machinery and equipment (HS 85), in particular, resulted in a surplus for Tunisia. Other major export goods from Tunisia to the EU include unprocessed mineral fuels, footwear and apparel, although the apparel sector is facing challenges, and export volumes to the EU have declined since 2005 (Grumiller et al. 2018b). The import side is dominated by processed mineral fuels, machinery and motor vehicles (Table 3).

Table 3: EU-Tunisia trade by product (million EUR, HS 2 level)

		2005	2010	2015	2019
Total EU-Imports from Tunisia		6,815	9,523	9,482	10,155
HS Code	Product				
85	Electrical Machinery and Equipment	1,137	2,443	2,958	3,127
62	Apparel, not knitted	1,814	1,645	1,426	1,480
27	Mineral Fuels	809	1,493	605	678
61	Apparel, knitted	655	687	569	542
64	Footwear	356	488	395	467
Total EU-Exports to Tunisia		7,927	11,065	10,679	11,048
HS Code	Product				
85	Electrical Machinery and Equipment	1,054	1,810	1,769	1,962
27	Mineral Fuels	911	1,107	1,094	1,560
84	Machinery	918	1,287	1,009	1,024
39	Plastics	347	511	601	696
87	Motor Vehicles	528	792	742	520

Source: Eurostat Comext

Trade in services had become an important source of export earnings for Tunisia by 2011. In particular, the travel industry, communication services and other business services showed trade surpluses, to some extent rebalancing the deficits in merchandise trade. However, earnings from travel and transportation have experienced drastic declines, particularly in 2015, on account of the deteriorating security situation caused by the terror attacks of that year. The surplus in service trade dropped from USD 2.46 billion to USD 300 million in 2015, recovering slightly to USD 640 million in 2019 (UN Comtrade data). The drastic decline in the tourism sector due to the COVID-19 crisis in 2020 will most likely adversely affect the service trade balance in the near future.

1.2. The Economic Situation of Tunisian Agriculture

Agricultural, fishery and processed agricultural production are still highly relevant for the Tunisian economy in terms of value-added and employment. In 2019, agricultural sectors accounted for 10.4 % of GDP while the food industry provided a further 3.3 %. Between 2010 and 2017, agricultural GDP grew by 2.8 % per year on average (WDI data; Chebbi et al. 2019: 13). In addition, agriculture and fishery accounted for 14.5 % of total employment in 2018, which is equivalent to more than 500,000 people. However, The agricultural sector is affected by a pronounced process of structural change and, since 2010, the share of employment has declined by roughly 3 %, connected in part to internal migration from rural areas (Chebbi et al. 2019).

The patterns in production and trade in agricultural and food sectors are presented in Table 4 (GTAP 10 data). Some sectors are highly relevant in terms of value-added and exports, such as for example, 'vegetables & fruits' or 'food & beverages'. The vegetable oil sector is particularly important for exports, with olive oil being Tunisia's major export product. In contrast, several sectors around 'cattle', 'dairy', 'animal products' or 'meat processing' generate notable shares of value-added but are focused on the domestic market, with low shares in exports and imports. Finally, the 'grains' sector includes domestic production but is highly dependent on imports of cereals.

Table 4: Sectoral Aggregation

	Sectors	Share in Agri-VA	Share in Agri-Exports	Share in Agri-Imports
1	Grains	7.4%	0.3%	35.8%
2	Vegetables & Fruits	34.2%	28.2%	3.6%
3	Oil Seeds	4.0%	0.0%	12.3%
4	Cattle	3.6%	0.3%	1.3%
5	Animal Products	5.3%	0.9%	0.8%
6	Raw Milk	6.2%	0.0%	0.0%
7	Fishing	4.5%	3.6%	1.5%
8	Meat Processing	11.4%	1.1%	1.2%
9	Vegetable Oils	1.9%	27.4%	13.2%
10	Dairy	5.7%	4.4%	2.0%
11	Food & Beverages	15.8%	33.7%	28.4%

Source: GTAP 10

The structural difference between the agricultural sectors also reflects the Tunisian policy approach to agriculture, which aims for sufficient and stable income for farmers, a high level of

self-sufficiency for the main commodities and affordable consumer prices for basic necessities (Chebbi et al. 2019). The policy tools to achieve these goals include, for instance, subsidies, state trade monopolies as well as state control of producer and consumer prices (FAO 2017; Rudloff 2020). A focus lies on the support for domestic production of grains and animal feed by way of subsidies for inputs, import protection and farm-gate price fixations, as well as consumer subsidies for staple foods such as bread and couscous (ibid.). Key sectors in the Tunisian agricultural strategy have been the milk and dairy industry, in which increased production of milk has achieved a high level of self-sufficiency (Chebbi et al. 2019). On the export side, the olive oil sector is particularly well supported by the Tunisian Olive Oil Board (Office National de l'Huile, ONH), even though the state agency has lost its export monopoly on bulk olive oils and has largely put a stop to price supports (Grumiller et al. 2018b).

The wide-reaching support of the local agriculture and food sectors requires substantial government spending. In 2017, 4.6 % of the Tunisian public expenditure was allocated to agriculture, though the share of these expenditures relative to the rest of the public budget and relative to GDP is declining (Chebbi et al. 2019). Consumer subsidies for food have remained stable at around 2 % of GDP since 2010 (World Bank 2020: 11). Tunisian agricultural policies have been severely criticised as inefficient, costly and welfare reducing, for instance, by the World Bank (2014). Nevertheless, the main principles outlined above still form part of the current agricultural Strategic Development Plan 2016-2020, which also includes new aspects such as the efficient use of water resources (Chebbi et al. 2019). Given the complexity of policy measures and their political sensitivity, drastic shifts in the Tunisian agricultural policy system triggered by a process of far-reaching liberalisation of agriculture would imply substantial changes for the production structure, for employment, and for food security and political stability.

A further key issue for agricultural development is Tunisia’s participation in international trade. In 2019, trade in agriculture, fishery and processed agricultural products (HS 01 to 23) accounted for around 10 % of total exports and imports in goods (UN Comtrade data). Consequently, Tunisia faces a trade deficit in agricultural trade similar to the deficit in overall trade. A major difference in comparison to trade in manufactured goods, however, is the geographical distribution of agricultural exports and imports. While the EU dominates as the major export destination (71 %) and source of imports (52 %), agricultural trade is regionally more diverse (Table 5). For instance, the MENA Region is an important export destination for agricultural and food products, and Eastern Europe is a major source of grain imports.

Table 5: Tunisian Export and Import Shares by Regions in 2019

	Exports		Imports	
	Total trade	Agri-trade	Total trade	Agri-trade
EU	74%	44%	52%	26%
MENA	10%	24%	12%	6%
North America	2%	10%	4%	11%
East Asia	1%	5%	14%	6%
SSA	2%	6%	0%	2%
South Asia	1%	0%	2%	3%
Eastern Europe	2%	2%	10%	22%
Latin America	0%	1%	3%	20%
Others	7%	8%	4%	3%

Source: UN Comtrade

As said, the EU remains the main destination of agricultural exports. As shown in Table 6, almost 50 % of Tunisian exports to the EU consists of virgin olive oils with an average of around

EUR 250 million in export value since 2010. Behind olive oil, items with the highest export values included dates, seafood and fish, as well as vegetable and fruit products. In 2019, exports of most products had risen in comparison to the average of the previous ten years.

Table 6: Top 10 products exported from Tunisia to the EU (HS6 level)

Code	Products	Exports 2019 (Mio EUR)	Average 2010-2019 (Mio EUR)
01 - 23	Total	582.5	539.7
150910	Virgin olive oil	264.3	247.3
080410	Dates	106.3	82.2
030617	Shrimps	39.7	44.3
070200	Tomatoes	25.6	15.1
071290	Vegetables and veg mixes	14.7	13.6
230690	Oilcake	12.5	12.9
030194	Bluefin tuna	11.0	11.9
151000	Other olive oils	9.6	6.4
080510	Oranges	8.1	9.7
210390	Preparations for sauces	7.8	7.5

Source: EuroStat

As Table 7 shows, the main imports from the EU to Tunisia in 2019 consisted of cereals (durum wheat, wheat, barley, maize). Imports of these products are stable over time, as shown by the average over the previous ten years. Imports of two types of products are slightly higher in 2019 than the average over the previous decade, namely live cattle and milk and cream (in solid form), of which there is significant local production. On the other hand, the import of cattle feed in 2019 was below the ten-year average.

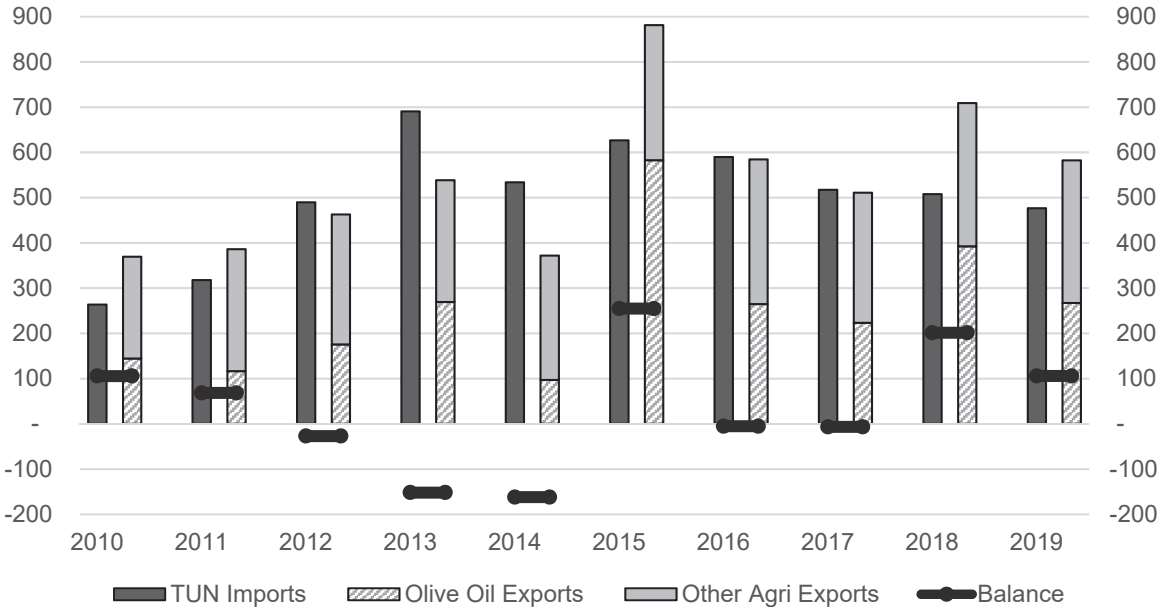
Table 7: Top 10 agricultural products imported from the EU (HS6 level)

Code	Products	Imports 2019 (Mio EUR)	Average 2010-2019 (Mio EUR)
01 - 23	Total	476.6	501.4
100119	Durum Wheat	71.5	124.7
100390	Barley	52.9	61.6
100199	Wheat	48.9	58.1
230990	Animal Feeding	22.1	31.4
100590	Maize	18.2	9.9
210690	Food preparations	14.1	11.8
150710	Soya-bean oil	13.8	23.9
40210	Milk and cream (solid)	12.9	8.5
70110	Seed potatoes	12.7	12.2
10229	Live cattle	12.2	8.1

Source: EuroStat

On balance, bilateral trade in agricultural and food products shows significant variations, strongly linked to variations in export volumes of Tunisian oils (Figure 1). With respect to imports from the EU, we observe that import values fluctuated around EUR 500 million between 2010 and 2019. On the export side, we see two distinct periods. Between 2010 and 2014, the value of exports fluctuated between EUR 400 and EUR 500 million, and between 2015 and 2019, export values varied between EUR 500 million and EUR 900 million. Thus, due to the positive trajectory of olive oil exports, Tunisia has shifted from a level of deficit in its agricultural trade balance with the EU to a situation of surplus in the period from 2015 to 2019.

Figure 1: Agricultural exports, imports and trade balance between Tunisia and the EU



Source: EuroStat

1.3. The ALECA Negotiation Process

The ALECA agreement proposed by the EU to Tunisia is a new generation ‘Deep and Comprehensive Free Trade Agreement’ (DCFTA). The agreement has the objective of improving the integration of Tunisia’s economy into the EU single market and is in line with the EU’s agreements with other countries of the European Neighbourhood Policy (ENP) in the South of the Mediterranean and in Eastern Europe (Chandoul 2017). These agreements have two main dimensions:

- The **dimension of comprehensiveness**, meaning that the agreement covers a wide range of trade issues and goes far beyond enhanced market access for trade in goods. New generation agreements include the liberalisation of trade in still protected areas such as agricultural and food products, as well as trade in services, public procurement markets and cross-border investment. Moreover, the agreements target other trade-related issues such as intellectual property rights, competition law, state subsidies, transparency and customs procedures.
- The **dimension of deep integration**, involving the approximation of legislation, norms and standards in partner countries to those of the EU, known as the ‘*acquis communautaire*’. This approximation covers a large number of regulations, including, amongst others, sanitary and phytosanitary (SPS) rules, technical barriers to trade (TBT) and certain sector-specific regulations. The agreement specifies the principles, concepts, legal provisions, and standards of community law that must be interpreted and applied by the EU’s neighbours in different areas. The approximation of legislation is linked to access to the EU internal market on a preferential basis.

In the case of ALECA, the areas and issues to be covered in the agreement were indicated in a report produced during the preliminary round of negotiations in October 2015 in Tunis (European Commission 2015).¹ A key goal is to bring Tunisian legislation closer to that of the EU in selected areas, which is a fundamental element of the ENP and a prerequisite for potential access to the EU market and other incentives such as visa facilitation. From the EU perspective, the coupling of simplified trade in goods and services with regulatory approximation and improved economic governance should eventually lead to significant long-term economic growth in partner countries (De Micco 2015). The EC also emphasises the close links between the political success of Tunisia's young democracy with its improved economic performance and argues that the latter should be fostered by ALECA (Malmström 2015).²

As of 2020, four formal rounds of negotiations between the EC and Tunisia had taken place. A key issue in the ALECA negotiations, evident since the first formal round of negotiations in Tunis in 2016, has been the trade in agricultural, processed agricultural and fisheries products. Even though tariff liberalisation was already envisioned in the Barcelona Declaration of 1995 and in the Association Agreement of 1998, both parties still apply tariffs, tariff quotas and entry price regulations on these products, which makes tariff liberalisation an issue in the ALECA negotiations. The EU's proposed SPS and TBT regulations will also particularly affect agricultural sectors in Tunisia. Detailed proposals and fact sheets on trade in agricultural products and on sanitary and phytosanitary measures had already been prepared by the EC at the start of the ALECA negotiations.

According to the published proposals, the EC requests a far-reaching liberalisation of tariffs and tariff quotas for agricultural products (European Commission 2016d). At the moment, both parties apply MFN regulations for most products in bilateral trade. On the Tunisian side, imports of agricultural products from the EU are charged with tariff rates from 10 to 36 % in most agricultural and foods sectors (see Table 8 and Chandoul/Ben Rouine 2019: 4). Consequently, the ad-valorem equivalents (AVE) of agricultural tariffs charged on imports from the EU are very close to the MFN tariffs of around 32 % applied by Tunisia (Rudloff 2020). The EU, on the other side, uses tariffs and tariff quotas as part of its MFN regime, in which the AVE tariff rates of 12 % are generally lower than Tunisian MFN rates. Given the higher level of tariff protection and the already existing preferences, the greater absolute effort in dismantling tariffs in response to ALECA will fall on Tunisia.

The assessment of the actual difference in the tariff protection between Tunisia and the EU is, however, complicated by the preferences granted by the EU on selected Tunisian agricultural products. Most prominent is the tariff rate quota regulation on olive oils, this being the major agricultural export product of Tunisia. As of 2006, the EU grants Tunisia tariff-free imports for up to 56,700 tonnes of olive oils (bottled and bulk) per year and applies a fixed Euro amount per 100 kg for volumes above the threshold. Further, bulk olives oils can be exported duty-free for inward processing to the EU, by which the notification of Tunisian origin is lost. In total, the large majority of Tunisian olive oils are imported duty-free (Eurostat data), but the quota system restricts the import of specific bottled olive oils that generate higher value-added (Grumiller et al. 2018b; Rudloff 2020). Moreover, the EU grants seasonal duty-free access for selected vegetables and fruits, meaning that Tunisian products enjoy preferential tariff rates for a defined time period (mostly in the winter months) within the entry price system. Also, there are tariff

¹ As the negotiations are still ongoing, the details on the ALECA agreement discussed in this report refer to texts, reports and proposals on the negotiations as published by the EC (see, for instance, <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1380> and <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1380>).

² All references in French used in this study are translated by the authors.

preferences for processed tomato products (ibid.), and the EU has granted Tunisia a preferential regime at a zero tariff for dates and shrimps.³ These highly product-specific regulations make the calculations of AVEs notoriously difficult (Döbeling/Pelikan 2019), and actual tariff barriers for Tunisian exports are potentially smaller than the reported EU AVE tariff rates of close to 12 % (Rudloff 2020). This influences strongly the potential benefits that the Tunisian side can expect from tariff liberalisation in ALECA and thereby the simulated model results (see also scenarios and model simulations in section 4).

The key symbolic role of the EU tariff quota on olive oil in the negotiations was underlined on 19 April 2016, when in the middle of the negotiations, the European Parliament adopted the regulation 2016/580, granting Tunisia an additional cleared quota of 70,000 tons of virgin olive oil (35,000 tons in 2016 and 35,000 tons in 2017). This offer was intended to support Tunisia after the economic slowdown in 2015, and it was meant to provide an incentive to commit to the ALECA negotiations. However, out of the 70,000 tonnes, Tunisia was, in the end, able to take advantage of only 2,557 tonnes or 3.7 % (Ben Rouine 2018). Similarly, Tunisia was only able to exploit the full quota volume in 2006 and again more recently in 2018, 2019 and 2020 (see also European Commission 2020c). Tunisia's National Olive Oil Board has asked the EU to increase the quota but has been unsuccessful (DeAndreis 2020).

Given the differences in the level and structure of tariff protections, the general principles for the negotiations as defined in the first formal round of negotiations in Tunis from 18 to 21 April 2016 are highly relevant for the agricultural sectors (European Commission 2016e). These principles include:

- **Asymmetry of liberalisation:** commitments should be commensurate to the level of development of each party;
- **Progressive opening:** trade liberalisation should be progressive and accompanied by the support necessary to strengthen the competitiveness of the Tunisian economy;
- **Regulatory approximation:** approximation should concentrate on priority areas identified by Tunisia.

With regard to tariff liberalisation, the EU proposes that: "*[a]s a means of increasing the transparency of the liberalisation process, the 'negative list' approach will be applied. Such a list will cover only sensitive, non-liberalised products that require specific treatment*" (European Commission 2016d: 2). The EU proposes to protect sensitive products through tariff quotas instead of tariffs (European Commission 2016a), which requires a specific design to achieve the desired effect. Regarding the asymmetry of liberalisation, the EU suggests that "*[t]o take into account the difference in economic development, both parties provide for a possible transition period for liberalisation on the Tunisian side. Such a transition period would be between 0 and 10 years, depending on the products*" (European Commission 2016d: 1). Judged against transition periods of 20 years or more granted by the EU in the context of the negotiations on Economic Partnership with African ACP countries, this offer is rather modest (Chandoul/Ben Rouine 2019). Nonetheless, the terms of negotiations for the liberalisation of trade in agriculture, processed agriculture and fisheries products proposed by the EU are presented as both ambitious (negative approach) and accommodating for Tunisia (asymmetrical approach), taking into account the larger effect of tariff liberalisation on the Tunisian side.

The EU also specified its demands for the regulatory approximation in the agricultural sectors, in which "*Tunisia shall progressively approximate its sanitary and phytosanitary regulations to the EU acquis*" (European Commission 2016c: 2). Similar to the EU AAs & DCFTAs with East

³ Detailed EU tariff measures can be retrieved from the TARIC database: https://ec.europa.eu/taxation_customs/dds2/taric/taric_consultation.jsp?Lang=en; Eurostat differentiates trade data by tariff regimes:

European countries, decisions on equivalence should be reached in an SPS Sub-Committee, depending on the suggested approximation by the Tunisian side (see also chapter 3). For its part, Tunisia "recalled that the upgrading and modernisation of the agriculture and fisheries sector are necessary to accompany the liberalization of trade with the EU" (European Commission 2016e)

It was two years later, from 28 to 31 May 2018, that the second round of negotiations was held in Tunis. On agricultural issues, the minutes mention that: "*without questioning the principle of asymmetry as such, the discussion on the exact modalities of transition periods for liberalisation on the Tunisian side has not been finalised*" (European Commission 2018a). The two parties refer to the next round of discussions on sensitive products that will have to be included in the negative list in the framework of ambitious trade liberalisation. The pace of negotiations has subsequently accelerated with the third round of negotiations taking place in Brussels from 10 to 14 December 2018, in which agricultural issues turned out to be a contested issue between the two delegations. Referring to the disappointing results of the additional quota for Tunisian olive oil in 2016 and 2017, when only a small amount of olive oil was additionally exported as bottled olive oil, the Tunisian negotiators asked the European side to: "*take substantial preferential measures in favour of strategic sectors such as olive oil*" (European Commission 2018b). On the central issue of asymmetry, the two delegations "*confirmed their agreement on most of the parameters while noting that a difference of views still remains on the exact modalities of asymmetry in favour of Tunisia*" (ibid.).

Details with respect to sanitary and phytosanitary measures could be discussed during the third round of negotiations in which the two parties "*identified the articles on which there is agreement and those on which positions could be brought closer together, as well as the articles that require further discussion*" (ibid.). In parallel to the ALECA negotiation process, the EU and Tunisia have already advanced the harmonisation of SPS standards through a twinning project entitled 'Institutional support in the field of sanitary and environmental risk control'. The project, which ran between June 2015 and May 2017 in collaboration with the National Agency for Sanitary and Environmental Product Control (ANCSEP) (Chandoul/Ben Rouine 2019), resulted in a national Tunisian Law on Sanitary Safety, adopted by the Tunisian Parliament on 13 February 2019, and sought to achieve approximation to the European *acquis communautaire* by drawing heavily on Regulation (EC) No. 178/2002, establishing the basis for European SPS standards (ibid., see Chapter 5 for more details).

The fourth round of negotiations was held in Tunis from 29 April to 3 May 2019. This round gave rise to a multitude of controversies in Tunisia. Indeed, on 30 April 2019, in the middle of negotiations, the National Chamber of the Pharmaceutical Industry published its position on ALECA and denounced the asymmetry of the proposal in favour of the EU through the extension of patents, the lack of consultation with the professional bodies of the sector, and recommended sticking to the TRIPS agreements (CNIP 2019). During the 1 May Labour Day demonstration, the workers' union (Tunisian General Union of Labour [UGTT]), together with political parties and civil society representatives, took up the slogan of the activists against the ALECA agreement: #BlockALECA (Ben Said 2019). The activists of #BlockALECA also stormed a meeting between Tunisian civil society representatives and the European delegation to denounce the agreement. For its part, the farmers' union (Tunisian Union of Agriculture and Fisheries [UTAP]) issued a statement on 6 May 2019, rejecting the ALECA agreement in its current version (UTAP 2019). On the basis of citizen mobilisations, the UGTT announced on 23 May 2019 the formation of a national collective against ALECA (Flehetna 2019).

On the substance of the negotiations, several key points evolved during the fourth round. Indeed, the report on the fourth round indicates that the parties "*had in-depth exchanges on the modalities of asymmetry, and progressivity, on tariffs, as well as on domestic support policies*

for the agricultural sector, taking into account the difference in economic development between the two parties” (European Commission 2019: 2). On sanitary and phytosanitary measures, the report also states that the parties had identified points to be reformulated or clarified on *“objectives, definitions, approximation of legislation, EU support, recognition of phytosanitary status and regional conditions, determination of equivalence and safeguards”* (ibid.: 2–3). These developments, notably on domestic support, equivalence and safeguard measures, also echo the recommendations of a study by Chandoul/Ben Rouine (2019) that was presented at a public conference on 3 April 2019.

It should further be noted that the fourth round was held in the context of election campaigns for the legislative and presidential elections in Tunisia. The new government resulting from the elections did not take office until February 2020, one month before the COVID-19 crisis, and the ALECA negotiations were, therefore, not prioritized during this period. Only in September 2020 did the new Head of Government, Mr Mechichi, announce, within the framework of a conference on economic diplomacy, his intention to relaunch negotiations on ALECA (Amraoui 2020).

2. UNDERSTANDING NTMS AND REGULATORY HARMONISATION

2.1. The 'problematic' rationale for harmonisation

Import tariffs have been radically reduced over recent decades through international agreements under the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) and by regional and bilateral trade agreements. As a result, national policies and regulations, and their impact on trade, have gained importance in international trade negotiations. The debates revolve around 'Non-Tariff Measures' (NTMs), which are national policy measures “*other than ordinary customs tariffs, that can potentially have an economic effect on trade in goods, changing quantities traded, or prices or both*” (UNCTAD 2010: xvi). NTMs include border measures that directly alter imports and exports, such as quotas or export restrictions, although any ‘behind-the-border’ measures that pursue public policy objectives but have an indirect impact on trade can also be classified as NTMs (Hoekman/Nicita 2018: 18). Examples include regulations to safeguard the health and safety of consumers, which uniformly apply to domestic and imported products and can thereby have indirect effects on trade and foreign producers.

While the WTO system prohibits most border measures, the GATT/WTO approach towards behind-the-border measures emphasises that these measures are to be designed and applied in a transparent, non-discriminatory and least trade-restrictive way (WTO 2012). However, the differences in domestic regulations between trading partners have been identified as major obstacles to trade (Berden/Francois 2015). As a consequence, the elimination of diverging national regulations has been advanced, particularly in regional and bilateral trade agreements through regulatory cooperation (creation and alignment of common regulations over time), mutual recognition (countries recognise one another’s conformity assessment to standards) or regulatory harmonisation.

The harmonisation of domestic policies aims to ensure that trading partners use the same or similar measures to pursue public policy objectives, for instance, the same regulations for residuals in vegetables and fruits. The rationale for the trade-enhancing effects of regulatory harmonisation is twofold: i) as these regulations apply to all goods produced in both countries, there are no additional costs for border controls on imports from the partner country; ii) additional costs incurred by producers for compliance with foreign regulations can be eliminated in the long run. Both factors would reduce trade costs and facilitate trade flows as compared to a situation with diverging regulations.

The WTO encourages the alignment of domestic regulations towards international standards to foster multinational trade liberalisation (WTO 2012). Regional and bilateral trade agreements can, however, go beyond that. One country could approximate its legislation with the regulatory frameworks of the partner country and thereby gain better access to the partner’s market. This would achieve closer economic integration between the partners, which is a key element of the EU’s ‘European Neighbourhood Policy’. The EU aims for deeper economic integration of the Eastern and Southern neighbouring countries into the EU internal market by approximation of their legislation with the EU ‘*acquis communautaire*’. Such a regulatory approximation is implemented through Deep and Comprehensive Free Trade Area (DCFTA) and Association Agreements (AAs) (EC 2015).

As already outlined in chapter 1, such an alignment of Tunisian standards towards EU regulations was already part of the 1995 Association Agreement (AAs), which set out rules for [EU] Community standardisation, conformity testing and the jurisdiction of public authorities (Article 51). The EU-Tunisian ALECA goes beyond the AA to include also “*provisions on a full range of regulatory areas of mutual interest, such as trade facilitation, technical barriers to trade,*

sanitary and phytosanitary measures, investment protection, public procurement, competition policy and trade and sustainable development” (EC 2016a). For instance, the harmonisation and alignment of legislation of SPS measures should “*make the products of one trading partner more acceptable to the other*” (EC 2016b). The Sustainable Impact Assessment (SIA) of the DCFTA commissioned by the EC states that expected growth opportunities for Tunisia are primarily driven by “*reducing*” or “*lowering*” the trade costs of NTMs and, therefore, recommends regulatory approximation (ECORYS 2013).

There is, however, increasing acknowledgement that the prevalence and effects of NTMs on trade and welfare are “*still not understood well*” (de Melo/Nicita 2018b: 81). Behind-the-border NTMs tend to be opaque and include a diverse set of policy measures with multiple impact channels on public policy goals, welfare, value addition as well as trade flows. The simplified conceptualisation of NTMs as trade costs and foregone trade potentially excludes important effects. These effects include benefits of regulations on welfare by overcoming market failure (Beghin et al. 2013; WTO 2012: 53), the role of national preferences for the stability of regulatory frameworks or trade enhancing effects of NTMs (Ghodsi et al. 2017).

Further, the cost of compliance with foreign standards and the complex effects on exporters are generally not addressed in standard trade impact assessments, despite these compliance costs being particularly relevant in the case of regulatory approximation of one country to the legislation of a partner country. As the aligned regulatory measures apply to all producers and for all domestic as well as imported and exported products, all domestic actors have to adjust their production to the new foreign standard. Only if such legislative approximation is achieved can access of goods to the markets of a partner country similar to a common market be granted.

Therefore, regulatory harmonisation can be a “*double-edged sword*” (Augier et al. 2012), in particular when unilateral harmonisation of a Southern to a Northern country imposes higher costs to domestic firms in the South and penalises those companies on third markets where those higher standards bring no competitive advantage. As EU policy measures are generally stricter than standards in the Eastern and Southern partner countries, this implies a particular burden for all producers in the partner countries to adjust their processes to EU-level standards, even if they produce for the domestic market only. As indicated by (Hoekman 2016: 9), the “*approximation to the EU acquis may entail more costs than benefits*”.

2.2. Growing awareness of the complexity of NTMs

Over the last decade, debates on the role of NTMs on trade have emerged (de Melo/Nicita 2018a). NTMs are, however, nothing new in international trade. In the GATT system, non-tariff border measures were primarily regulated and only selectively prohibited to prevent the substitution of tariffs with other forms of import protection (Staiger 2018). Potential protective effects of domestic behind-the-border policies were not directly addressed, but provisions stipulated that they should be transparent, non-discriminatory and least trade-restrictive. Measures “*necessary to protect human, animal or plant life and health*” (Article XX in GATT agreement 1994) are explicitly recognised, but arbitrary or discriminating policies are prevented (WTO 2012). With the expansion of trade liberalisation and trade rules into new areas, more domestic policy measures have gradually become subject to disciplines. With the creation of the WTO in 1994, the obligations on border measures have been tightened significantly. The Agreements on Sanitary and Phytosanitary (SPS) Measures and on Technical Barriers to Trade (TBT) have strengthened the non-discrimination provisions for the design and application of domestic standards for agricultural and industrial products (Staiger 2018). The provisions for specific domestic regulations also expressed the perception of domestic policies as a substitute for tariffs at that time (de Melo/Nicita 2018a: 3).

With the deepening of economic integration and the expansion of trade rules into new areas over recent decades, the social awareness and concerns regarding public policy goals have been growing, which is also exemplified by the Sustainable Development Goals (SDGs) (Hoekman/Nicita 2018: 21). Domestic policies are, in this context, the first-best policies for correcting market failures such as information asymmetries, negative externalities or monopoly power (WTO 2012). By overcoming these market failures, national policy measures can increase social welfare and are “*a way of bringing the outcomes of a decentralized market economy more closely into line with social objectives that may not otherwise be achieved*” (Maur/Shepherd 2011: 198).

The increase in domestic policy measures alongside integration in an ever-globalised world has led to the combined influence of domestic policies and international trade policies. Considering further the rise of private-sector standards, these interrelations translate into a high variability of the trade and welfare effects of NTMs. The growing awareness of these complexities has resulted in a systematic classification of NTMs by the UNCTAD MAST (Multi-Agency Support Team) initiative (UNCTAD 2010). The UNCTAD Trade Analysis Information System (TRAINS) (UNCTAD n.d.) provides information at a product level on domestic legislation and on corresponding measures that potentially affect imported goods. The domestic policies are classified into technical (Chapters A to C) and non-technical (Chapters D to O), and export-related (Chapter P) (UNCTAD, World Bank 2018).

The chapters on SPS measures (Chapter A) and technical barriers to trade (Chapter B) account for 70 % of all measures recorded (ibid.: 3–4). Stylised facts based on frequency indices (share of traded product lines subject to at least one NTM) and coverage ratios (share of trade subject to NTMs weighted by import values) and other measures are commonly used to evaluate the TRAINS data by different dimensions (per country and country groups, chapter, sector, etc.). This highlights the importance of SPS and TBT measures in agriculture, in particular in animal and vegetable products, and of the more intense use of such measures in developed countries, including those in the EU (see, for instance, de Melo/Nicita 2018b). Most importantly, these data provide an important basis for the assessment of the effects of NTMs.

2.3. Effects of NTMs and harmonisation on trade

An increasing number of empirical studies have analysed the *effects of diverging NTMs* on trade flows over the last two decades, in particular with regard to SPS and TBT regulations for agricultural goods and technical regulations for manufactured goods (Santeramo/Lamonaca 2019b). Generally, these trade effects are ambiguous due to the complex impacts of NTMs on exporters and importing consumers (Fugazza 2013; Xiong/Beghin 2014), and the effects differ with respect to aggregation level of NTMs, sectors and products, as well as geo-economic patterns and the applied methodologies. Thus, results from various studies support the view of NTM as ‘catalysts’ as well as ‘barriers’ (Santeramo/Lamonaca 2019b).

Negative trade effects of NTMs on exports, however, tend to be the most pronounced in the case of South-North trade, as more demanding regulatory requirements in high-income countries create difficulties for exporters and regulatory institutions in low-income countries to meet these requirements (Hoekman/Nicita 2011; for EU-SSA agricultural trade, for instance, see Kareem/Rau 2018 and Santeramo/Lamonaca 2019a). According to Disdier et al. (2008), there are small effects from SPS and TBT regulations on trade among OECD countries, but impeding effects for developing countries’ exports to high-income countries. This is supported for instance by findings by Otsuki et al. (2001) on the adverse effects on export volumes from SSA countries due to increasing EU restrictions on allowable contaminations in selected agricultural goods, and by Shepherd/Wilson (2013), who find impeding effects of EU private product standards for developing countries’ exports.

A second debate concerns the *trade effects of NTM alignment* between trading partners. For the case of high-income countries, regulatory harmonisation, as well as mutual recognition of standards, increases the probability and volume of intra-regional trade (Chen/Mattoo 2008; de Frahan/Vancauteran 2006). However, regional alignment of regulations can lead to trade diversion due to reduced exports from excluded countries, particularly in the case of harmonisation. For the case of North-South trade, Shepherd (2007) finds that harmonisation towards international standards could be beneficial for the extensive margin of exports from developing countries, that is, the number and type of export companies and the extend of export markets. Disdier et al. (2015) analyse the effects of different forms of regulatory alignment between Northern and Southern countries and show that deep integration involving harmonisation to higher regional standards is actually trade-impeding for North-South and South-South trade, while harmonisation to international standards could be beneficial. Thus, adopting stricter Northern standards as part of trade agreements could raise costs for domestic producers and price them out of other export markets.

2.4. NTMs and compliance costs

The potentially distorted flow of exports is often associated with the additional burdens for producers seeking to export to countries with divergent regulations. In particular, higher standards of regulation than those established for the domestic market are typically perceived as restrictive for exporters, as underlined by business surveys among exporting companies. For instance, 90 % of Tunisian producers of agricultural goods and food see EU NTMs as too strict, with the proof of conformity representing the highest obstacle (International Trade Centre 2014). Survey results in other MENA countries confirm these findings (International Trade Centre 2015).

From the viewpoint of producers and exporters, the compliance to foreign product standards represents a source of costs, which can have adverse effects on the competitiveness and profitability of exports, thereby limiting export potential. Compliance costs include a variety of fixed and variable costs, including expenses for specific inputs or intermediates (sourcing costs), upgrading of processes to ensure conformity with sanitary standards (process adaptation costs), and prolonged delivery times due to conformity checks and documentation requirements (enforcement costs), as well as the investment in facilities and equipment or labour costs for employees to manage and supervise these processes. These tasks can be linked to policy measures and requirements that are included in the UNCTAD TRAINS database, which are often sector and product-specific.⁴ Private standards (such as e.g., the GlobalGAP certification) can add further costs beyond the compliance costs for mandatory regulations by targeting labour or environmental issues (see also sections 4 and 5 on the role of private standards for Tunisian exporters).

Compliance costs are product and company-specific and can be influenced by the institutional quality in a producer country, making them difficult to estimate. Several World Bank studies have provided estimations on compliance costs for exports based on company-level data and business surveys. Maskus et al. (2005) find that fixed costs of compliance to TBT amounts, on average, to 4.7 % of value-added for companies across 16 developing countries and that this additional investment raises variable costs. Aloui/Kenny (2005) estimate the cost of compliance with EU SPS measures for tomato exports from Morocco as up to 5 % of total production costs. Cato et al. (2003) find similar magnitudes for shrimp exports from Nicaragua, and Asfaw et al. (2009) show that investment costs related to GlobalGAP certification are equivalent to 30 % of total farmers' income. In addition to the costs for private producers, public authorities

⁴ The European Commission provides several services for non-EU exporters to specify the requirements for exports into the EU for all products, for instance the EC Trade Help Desk. See also CBI for detailed information for non-EU exporters.

and institutions must provide legal frameworks and food safety control systems. UNCTAD's (2005) estimation of costs in several SSA countries, therefore, includes data on both (absolute) macro costs of public authorities controlling and facilitating standards compliance and micro costs for private fruit exporters.

In the theoretical literature, compliance costs have been interpreted as effects of increased fixed costs on market structures and through the impact of higher variable costs on trade (Crivelli/Groeschl 2016; de Melo/Shepherd 2018). With reference to the theory of Melitz (2003) on heterogeneous firms and trade, 'standard-like measures' such as SPS and TBT standards are treated as fixed costs, which links entry to an export market to the productivity of a company (productivity cut-off) (de Melo/Shepherd 2018). Smaller and less productive firms find it harder to cover these fixed costs, which is highly relevant for developing countries, where firms tend to be less productive (International Trade Centre 2016). The role of fixed costs of adaption is also related to the effects of harmonisation towards international standards on the extensive margin of trade (Shepherd 2007), and it explains the trade-enhancing effects of NTMs when exports are primarily conducted by large and highly productive companies (Maertens/Swinnen 2009). Further, cost-benefit analyses of NTMs take into account compliance costs and demand-enhancing effects of NTMs to derive net-effects on trade (Beghin et al. 2015). Similar to the exports side, the information content of NTMs also influences imports and the structure of the importing company, as Baghdadi et al. (2019) show for the case of Tunisia.

The inclusion of productivity cut-offs also influences the approaches to understand regulatory harmonisation with EU standards. Augier et al. (2014) and DAVIS/JAUD (2014) see regulatory alignment by Morocco to EU standards as unilateral liberalisation, which increases costs to sell domestically, as all domestic producers must meet the stricter standards, and increases the competition from imports from the EU while existing exporters are not affected. Based on econometric analysis, these authors argue that the increased competition, quality signalling and shielding from low-cost importers create overall positive effects on profit margins.

2.5. NTMs in standard CGE models

For all EU FTAs and DCFTAs, CGE models are used to simulate potential economic and social effects of the agreements as part of Sustainable Impact Assessments. This type of macro-economic models includes the potential economic and trade effects of regulatory changes as part of a trade agreement. The basic approach towards NTMs is focused on assessing the trade-impeding effects of regulatory differences between trading partners but does not account for the complex effects of regulations on trade flows or on supply and demand, as discussed previously.

NTMs enter these models as trade costs in terms of "*fictitious' import tariffs, that – if real – would reduce imports by exactly the height of the NTM*" (Berden/Francois 2015: 3). These NTMs trade costs, also known as ad valorem equivalents (AVEs), express the trade effects of regulatory differences in numerical terms. CGE models then simulate the effects of the removal or reduction of these AVEs on trade and consequently on other macroeconomic factors such as value-added, consumption or prices. In standard CGE models, the reduction on AVEs typically generates positive welfare effects, as in the SIA on ALECA by ECORYS (2013).

The CGE simulations, first of all, rely on the quantification of tariff equivalents. One option could include price-gap methods, in which AVEs are directly derived from the comparison of product prices before the applications of measures (e.g., world market prices, import prices) and afterwards (e.g., consumer prices). However, these approaches suffer from the limited availability of price data and the potential exclusion of non-price effects (de Melo/Nicita 2018b: 108). A second possibility could include econometric methods, in particular, gravity models.

Gravity models generally assume that in a frictionless gravity world, bilateral trade would be proportional to the GDP of the partner countries. Deviations in real trade flows are, in turn, related to trade costs caused by multiple factors such as technology, tastes, market structures, transportation costs or trade policies, including NTMs. To show by how much NTMs restrict bilateral trade, measures on NTMs such as incidences (as collected in UNCTAD TRAINS) and the results of surveys (Berden et al. 2009) are explicitly taken up in gravity regressions (de Melo/Nicita 2018). The resulting NTM coefficients can then be translated to AVEs (see also Raza et al. 2014 for details on gravity models).

Generally, the gravity model approach has a focus on “*identifying distortionary effects of the trade-impeding effects of NTMs*” (ibid.: 111). The estimated trade effects in gravity models are highly sensitive to factors such as the countries involved, the type of technical NTMs, the proxies for NTMs, or the level of product aggregation as shown by Li/Beghin (2012) for agricultural and food trade. On a detailed product level, Ghodsi et al. (2017) show that NTMs impede up to 60 % in terms of the quantity of bilateral trade and a wide variety of trade effects. This also points to the problem that NTMs can have different effects on trading prices and quantities (de Melo/Nicita 2018b). Santeramo/Lamonaca (2019b) show further that effects on trade tend to be more negative in studies that use AVE as proxies for NTMs in comparison to other types of measure.

Most CGE models in SIAs apply AVE estimations from gravity models that indicate trade-impeding effects of NTMs, or they simply assume AVEs, as in the case of the ALECA SIA (ECORYS 2013). By reducing these AVE trade costs, standard CGE models simulate the effects on trade flows and, consequently, on other macroeconomic variables. In contrast to tariffs, NTMs do not raise public revenues. Instead, most CGE models assume, on the one hand, that the protective effects of regulations can generate rents that can be captured, for instance, by domestic actors. On the other hand, it is assumed that there are cost-generating effects of NTMs. However, these cost-generating effects are not linked to compliance costs, but they are conceived of as ‘iceberg trade costs’, which are presumed to imply ‘pure friction’. These iceberg NTM costs do not have an income counterpart which triggers ‘free’ gains from trade when NTM trade costs are reduced (Raza et al. 2016a).

Overall, standard CGE models focus on the trade-impeding and protective effects of NTMs, often based on numerical estimations of trade costs representing the foregone trade from regulatory divergence. The simulated effects of eliminating these NTM trade costs generate changes in rents as well as efficiency gains. However, “*standard [CGE] models do not offer many ways to include demand-shift and supply-shift effects and none of them are fully satisfactory*” (Fugazza 2013: 14), even though the literature on NTMs identifies these effects as essential. Moreover, the exclusion of compliance costs in these models potentially alters the effects of NTM liberalisation, and it ignores the costs of adjustment associated with regulatory harmonisation and the related effects, as can be shown in the case of regulatory alignment with the EU.

3. HARMONISATION AND APPROXIMATION TO EU REGULATIONS

The unilateral harmonisation (or, alternatively, approximation) of regulations towards the EU standard is an important tool in the EU's policies for the economic integration of neighbouring countries into the internal market. This process of regulatory harmonisation and the associated effects of adjusting legal frameworks in EU partner countries are hardly discussed in the context of the negotiations of DCFTAs or AAs. Reasons include the neglect of compliance costs to regulations and of the complexity of NTMs in the mandatory SIAs, as discussed in Chapter 2. However, compliance costs do play a role in the context of EU development programmes to support the adjustment process in partner countries, and we analyse two major instances in which the adoption of EU regulations plays, or has played, an important role:

- the EU enlargement to Eastern and Southern European countries in 2004 and 2007.
- the negotiations and conclusions of AAs between the EU and Ukraine, Moldova and Georgia

The examples provide essential insights into the process of regulatory harmonisation in the agri-food sectors, the role of compliance costs, the effects of harmonisation and, consequently, methodologies for ex-ante assessment. Though EU accession is not on the political agenda in the case of Tunisia, the regulatory approximation in agriculture foreseen under ALECA bears important similarities with the processes of regulatory harmonisation as implemented in the case of accession countries. Reviewing the experience of these countries thus bears important lessons for the ALECA negotiations.

3.1. EU Enlargement / Accession

A crucial element in the process of EU enlargement to countries in Central and Eastern Europe (CEE) and to smaller Southern European countries in 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia) and in 2007 (Bulgaria and Romania) as well as 2013 (Croatia) has been the integration of these countries into the EU's single market. The Association Agreements (AA) concluded between the EU and these countries from 1991 to 1995 started the long-term process of economic liberalisation and integration into the EU market, including the regulatory harmonisation of CEE countries within the framework of the so-called 'Copenhagen criteria'. Candidates had to build up the capacity to apply the whole body of EU law and practice (*'acquis communautaire'*) to join the EU, which required above all a process of institutional capacity-building (Kolesnichenko 2009). By 2006 new member states had implemented 99 % of the 2,683 EU Directives.

The integration into the EU internal market was expected to generate structural changes, particularly for the agricultural sector, and thus for a highly relevant sector in terms of value-added, employment and rural livelihoods in all CEE countries. For instance, the current share of value added by agriculture in Tunisia, at around 10 %, is comparable to the levels in Bulgaria and Romania at the time of their accession in 2007, and the Tunisian share of agricultural employment, at 13 % in 2019, corresponds to levels in Poland in 2004 and Bulgaria in 2007 (WDI data). Thus, the effects of EU enlargement on the agricultural sector and its integration into the common agricultural policy (CAP) framework was a major concern ahead of the EU accession of these countries.

Several studies conducted ex-ante assessments of potential effects of the EU enlargement through CGE model simulations, many with a focus on agriculture. Generally, all studies highlighted the key role of budget transfers and financial support by the EU to new member states. Baldwin et al. (1997) expected positive income effects in CEE countries through better investment conditions and through farm and structural funds transfers. With more sectoral details,

Hertel et al. (1997) expected overall welfare gains and productivity increases in crop and live-stock sectors in the CEE countries due to tariff liberalisation and budget transfers from the EU. Bach et al. (2000) projected strong increases in agricultural production in CEE countries at the expense of the manufacturing and service sectors, as well as welfare gains, which were largely driven by EU transfers. Bchir et al. (2003) found that without support for the agricultural sector, GDP in most CEE countries would decline.

The EU acknowledged early on that the harmonisation of the institutional framework and the structural changes in the economies of the CEE countries involved considerable effort and costs for public and private actors. The EU created various pre-accession assistance funds to prepare new members to become part of the financial framework of the EU, including the Common Agricultural Policy (CAP), such as the PHARE programme for institution building and support of National Development programmes, which had been originally set up in 1989 to support Poland and Hungary. In 2000, the PHARE programme was complemented by the Programme for environment and transport investment support known as ISPA (Instrument for Structural Policies for Pre-Accession) and SAPARD (Special Accession Programme for Agriculture and Rural Development) (European Commission 2003). Several studies used these EU support funds as a proxy for harmonisation-related costs (Dimitrov 2009).

In total, the EU pre-accession programmes had a volume of EUR 18.5 billion, of which PHARE accounted for 85 %. The SAPARD programmes (EUR 2 billion) and 10 % of the PHARE budget (EUR 1.5 billion) were also allocated to the agricultural sector (Business Strategies Europe 2015). The SAPARD funds alone amounted to 2.6 % of the value-added in agriculture in the CEE from 2000 to 2004, with the highest ratio in Latvia (5.2 %) and the lowest in Hungary (1.2 %).⁵ The actual compliance costs in the agricultural sector were probably higher, with national governments in CEE countries increasing their public expenditures ahead of accession (European Commission 2006). In Poland, for example, investment layouts to upgrade agriculture amounted to EUR 1.7 billion, and capital expenditure increased by 70 % (Kundera, 2014), and the government issued a programme supporting agriculture and rural development that reached 12 % of total government expenditure (Chloupkova 2002). With accession in 2004 and 2007, CEE countries also entered into the CAP and other EU systems, which increased the EU payments from EUR 1.8 billion in 2003 to EUR 11.8 billion in 2005, of which 40 % went to agriculture (European Commission 2006: 30)

On a sectoral level, Kundera (2014) notes that the majority of financing for compliance in Poland was used to upgrade and modernise the method of milk production. For the dairy sector in Hungary, Kiss/Weingarten (2003) estimate that compliance costs have been particularly burdensome for small producers with investment costs of up to 17.9 % of the average milk price, which propelled the restructuring of the sector towards larger entities. Menghi (2011) assesses the compliance costs and benefits of EU regulations for selected EU producers for the case of eight agricultural products. Compliance costs differ significantly by type of regulations relevant to the specific products as well as the typical farm size. For instance, compliance costs for pig meat in Poland amounted to 7.8 % of total costs compared to 2.8 % in the Netherlands due to higher costs for animal welfare and food safety standards in Poland.

On a firm level, Michalek (2005) conducted surveys on the compliance costs of Polish exporters to the EU market in the food-processing industry. More than half of the companies perceived EU membership as positive, while for 20 % of companies surveyed, adjustment costs were higher than potential gains. In particular, costs for certification and labelling were seen as particularly high. Almost two-thirds of companies reported that the average costs of production had increased due to the adoption of EU hygiene regulations. For one-third of companies, this amounted to an increase of 5 % or more. Investments for adjusting production and storage buildings were also perceived as high.

⁵ Own calculations based on data by Dimitrov (2009) on SAPARD funds per country and WDI and ECB data.

The effects of EU integration on the agri-foods sectors in Central and Eastern Europe (CEE) have been uneven across countries. Real agricultural value-added stagnated in most CEE countries from 1998/2000 to 2011/2013 in absolute terms with the exception of Poland and Lithuania. In Hungary and the Czech Republic, value-added increased in the period 2013-2016, so that total real agricultural value-added of all new EU member states is now above the level at the time of EU accession in 2004 and 2007 (Eurostat data) (Csaki/Jambor 2019). Nevertheless, real incomes for farmers in CEE has generally increased as a result of CAP subsidies, in particular in Estonia and Poland (Jámbor et al. 2016). The agricultural sector in CEE also experienced higher productivity gains as compared to EU-15 countries, although CEE countries are still lagging behind in terms of cereal and milk yields or feed conversion ratios, which are still one third lower on average (European Commission 2016b).

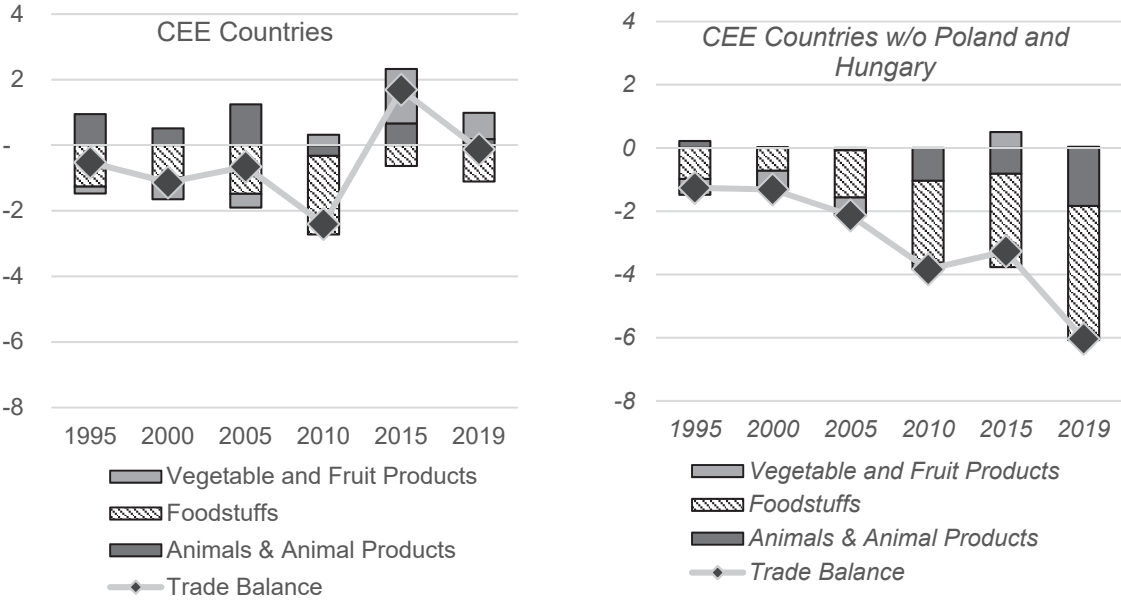
The trade volume between CEE and EU-15 countries has increased significantly since accession. From 2000 to 2019, the agricultural and food exports (HS 01-23) from CEE countries to EU-15 countries increased from USD 3.5 billion to USD 37.3 billion, and imports rose from USD 4.5 billion to USD 36.6 billion. The overall trade budget in this sector turned positive in the 2000s, driven by a surplus in vegetable and fruit trade (HS 06-15) and a declining deficit in the trade of foodstuff (HS 16-23) (Figure 2, left part). The critical factor for this development, however, was the surplus in Poland and Hungary across the whole agri-food subsector; the remaining CEE countries expanded their trade deficits vis-à-vis the EU-15 (Figure 2, right part). The deficit is most pronounced in high value-added processed foodstuffs, which appears to be a long-term adverse pattern in most CEE countries (Török/Jámbor 2013).

Trading outside of the EU, CEE countries have been able to increase exports since 2010 to create a trade surplus. The surplus with Eastern European and Central Asian countries is due to exports of foodstuffs; the surplus with countries in Northern Africa and the Middle East can be attributed to exports of cereals and foodstuffs (UN COMTRADE data). Therefore, CEE countries are in competition with other EU neighbouring countries negotiating AAs and DCFTAs with the EU, as well as with exports from Tunisia in Middle Eastern markets.

The diverse effects of the integration of CEE countries into the EU market underline the fact that full regulatory harmonisation is not necessarily a one-size-fits-all model with universally positive outcomes. As Rodrik (2017) puts it: *“There is no general theory to compare with Comparative Advantage to explain why unified food or banking regulations should, for example, in principle be able to work to the advantage of all countries. What harmonisation does entail, however, is sacrifice of national regulatory autonomy—and with it the ability to respond to the contours of individual economies and societies.”*

Important factors that determine the diverse outcomes in agri-food sectors among the CEE countries are linked to initial market structures as well as institutional factors that determine the domestic capacities to use EU assistance for the development of agricultural sectors. For the example of the dairy sectors in Poland and Romania, Bruszt/Langbein (2014) show that regulatory integration strategies in the respective country had to adjust to specific domestic conditions. While the Polish dairy sector has been able to make use of financial support and other incentives of EU integration as a result of successful cooperation between state and non-state actors, thus turning the country into a net exporter of dairy products, the Romanian dairy sector is more fragmented, with only few actors eligible to benefit from EU incentives, leaving large parts of the industry marginal to the process. As a result, the country became a net importer of high value-added agricultural products. These factors also explain diverging development strategies in the dairy sector in Hungary, where multinational corporations have played a central role, in contrast to in Poland, where the sectoral developments have been driven by domestic actors with domestic state support (László/Karas 2019).

Figure 2: CEE – EU-15 trade in agri-food products (in billion USD)



Source: UN COMTRADE Data

Overall, the integration of CEE countries within the EU in the 2000s required full regulatory harmonisation with the EU system. This adjustment process was supported by the EU with the help of pre-accession funds, which, among other things, focused on agricultural sectors on account of their essential role within CEE economies. The funds assisted in the upgrading of state institutions to create the capacity to integrate these economies into the EU internal markets. However, regulatory harmonisation is not in itself sufficient for successful economic integration, as it depends on domestic institutions and the political economy of the respective countries. The uneven outcomes in the agricultural and food sectors of individual CEE countries are an indicator for different kinds of interaction models between externally imposed institutional constraints, government institutions and private actors (ibid.).

3.2. EU AAs with Ukraine, Moldova and Georgia

After EU enlargement in the 2000s, the EU aimed for stronger relations with the now neighbouring countries in Eastern Europe. To this end, the EU began negotiations with Eastern European countries on Association Agreements (AAs) and, in 2009, launched the Eastern Partnership (EaP) with Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine, building on the bilateral action plans within the framework of the European Neighbourhood Policy (ENP). Driven by the EU’s new trade policy agenda “Global Europe Strategy” in 2006, the AAs included – besides political dialogue and cooperation – closer economic integration through establishing a Deep and Comprehensive Free Trade Area and regulatory alignment to the EU (Van der Loo 2013).

The EU launched negotiations with Ukraine on the AA in 2007, but final ratification on both sides took place only in 2016 after political turmoil and military conflicts (Emerson/Movchan 2016). The AA entered into force in 2017, even though it had already earlier been applied on a provisional basis (European Commission 2020b). In contrast, in the case of the Republic of Moldova, the EU set ex-ante conditions for the AA negotiations, requiring Moldova to begin implementing legal approximations towards the EU acquis, with a particular focus on trade-related issues, whilst negotiations were still ongoing (Wolczuk et al. 2017). The AA was signed

in June 2014, but its implementation was complicated by financial corruption and subsequent political instability in Moldova in late 2014. This required a shift in focus away from primarily trade-related issues in the regulatory frameworks towards other institutional frameworks such as the rule of law (ibid.). In the case of Georgia, preconditions for the AA were set with regulatory adjustment through the bilateral ENP Action Plan and through EU conditionalities for regulatory adjustments, even though Georgia had strongly embraced policies of liberalisation and had already eliminated tariffs (Maliszewska 2008; Messerlin et al. 2011). The EU required the adoption and implementation of laws on SPS and competition closer to EU regulations, prior to the AA negotiations, these having been finalised in 2013 and entering into force in 2016 (Wolczuk et al., 2017). Up until now, the EU has not yet concluded AAs with any other EaP countries.

Beyond the elimination of tariffs on bilateral trade, the AAs between the EU and Ukraine, Moldova and Georgia also triggered processes of public administration reform within these partner countries, with the aim of achieving greater alignment between their respective legal frameworks with that of the EU. The rationale behind this approximation is enhanced market access to the EU and improved economic governance, which should lead to better conditions for economic prosperity (Emerson et al. 2006). Contrary to the EU enlargement to CEE countries, these partner states have no immediate perspective of EU membership. This limits the extent of regulatory adjustments concerning specific chapters such as Technical Barriers to Trade (TBT), Sanitary and Phytosanitary Measures (SPS), Customs and Trade Facilitation, Establishment and Services, Public Procurement and Competition. Furthermore, regulatory alignment differs from chapter to chapter, with some chapters specifying the EU directives that have to be adopted in full within specified timeframes, and others, such as those on TBT and SPS regulations, recommending approximation (Emerson/Movchan 2016).

The approximation of domestic regulations in the partner country stated in the AAs does not entail the full harmonisation with EU regulations but builds on equivalence of regulations (Van der Loo 2013). For the case of SPS regulations, the process to achieve recognition of equivalence by the EU requires the draft of a 'comprehensive strategy' by the partner countries on how to adjust and implement regulations, including monitoring processes. Only if the relevant AA sub-committee approves this schedule as equivalent to the EU regulations, and the EU considers the implementation as positive will the EU grant better market access by reduced physical checks at frontiers, simplified procedures and adjusted tariff rate quotas (Emerson et al. 2006; European Parliament Research Services 2018; Van der Loo 2013). Even though this approximation process does impose an explicit adoption of EU regulations, all AA partner countries have committed to adopting up to 272 EU directives into their domestic SPS regulations within five years (Emerson et al., 2018; Emerson/Kovziridze, 2018; Emerson/Movchan, 2016). This suggests that, while some SPS legislation may still reflect national circumstances, partners are likely to avoid the risk of the EU rejecting regulatory equivalence. Nonetheless, Wolczuk et al. (2017) identify a strong asymmetry in this process as the EU can refuse equivalence unilaterally and therefore put a strong conditionality on facilitated trade processes.

The costs of regulatory approximation in the context of the EU accession of CEE countries were also integral to the debate on AA negotiations. Messerlin et al. (2011) estimate that, in the case of Georgia, regulatory adjustments are particularly burdensome for SPS measures, as these "*would trigger an average price increase of 90 % for the key food products purchased by the one-third of Georgian population who live in poverty*" (ibid.: i). Emerson et al. (2006) list, but do not quantify, costs for the public sector (in recruiting and retaining skilled personnel and in allocating material resources for technical agencies), for the private sector (in changing the technical specifications and enabling service sectors to respect regulatory norms), and for accelerated economic restructuring (in the depreciation of investment and transitional unemployment). Movchan/Shportyuk (2012) note the adverse effects and costs from DCFTAs that occur due to higher domestic competition, increased standard compliance costs, costs associated

with legal and administrative adjustments and mitigation costs for labour reallocations. These authors suggest that partner countries likely have to bear these costs in the short run but would benefit from liberalisation in the long run and that the EU should provide financial assistance to reduce the burdens of regulatory changes.

Ex-ante impact assessments of more recent AA and DCFTA negotiations, in contrast to studies on EU enlargement, benefit from enhanced databases enabling CGE modelling exercises including effects of regulatory approximation. These studies also include the SIAs commissioned by the European Commission for Ukraine (ECORYS/CASE 2007) and for Moldova and Georgia (ECORYS 2012). Both SIAs consider the role of adjustment costs to EU regulations in their respective scenarios but adopt somewhat different approaches.

In the case of the Ukraine AA, ECORYS/CASE (2007) use survey results by Jakubiak et al. (2006) on border costs and compliance costs faced by Ukrainian exporters when meeting EU TBT regulations. According to Jakubiak et al. (2006), the estimated costs incurred in ensuring compliance with EU requirements in the agricultural sector amount to 14 % of the total production costs of exporters to the EU. However, these estimated costs only consider TBT regulations, and the study notes that companies that already export to the EU have more advanced technologies and quality control systems than producers for the domestic market, which suggests that the costs of meeting EU standards are substantially higher for most Ukrainian producers. In the SIA, it is noted that these “[s]tandardization costs therefore increase the cost of production for exports” (ibid.: 68), which weighs on the prices of Ukraine exports to the EU compared to production for the domestic market in the base scenario. However, the authors assume that these costs no longer apply to domestic producers once the regulations have been adjusted, but instead, that export costs are reduced as a result of harmonisation, in line with the common CGE modelling approach as discussed in chapter 2 above. Unsurprisingly, the SIA states overall positive results for most Ukrainian agri-food processing sectors as trade costs for exports presumably fall. Other CGE assessments of the EU-Ukraine AA also apply the common approach of reduced NTM trade costs and thus report positive effects for Ukraine (Emerson et al. 2006; Francois/Manchin 2009).

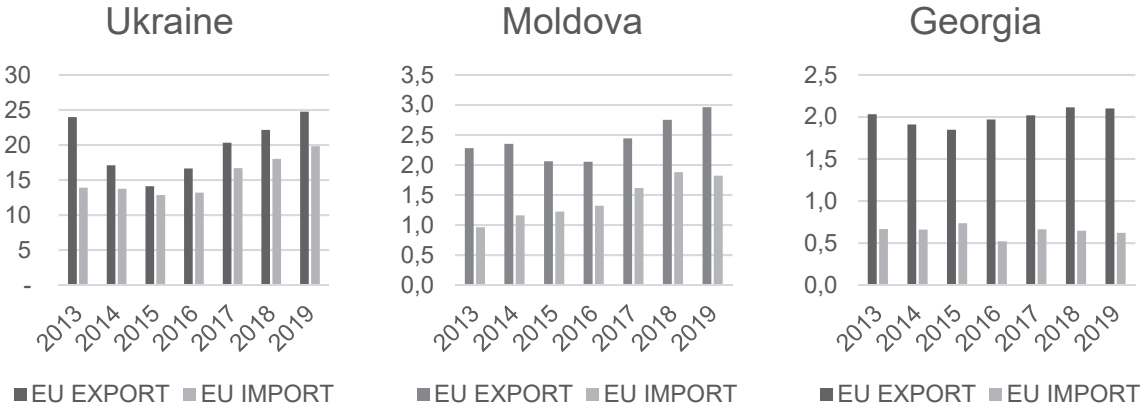
In CGE assessments for the EU AAs with Moldova and Georgia, the compliance costs are also modelled as trade cost reductions. Maliszewska et al. (2008) build on the survey results of Jakubiak et al. (2006) for Ukraine and assume higher production costs of 30 % for EU standard compliance in Georgia. For the case of a deep FTA, production costs are reduced by 50 % – similar to the findings of the Ukrainian SIA by ECORYS/CASE (2007) – which results in positive effects. In the SIA for the European Commission for both AAs, ECORYS (2012) state that “[i]t is impossible to make adjustments for the costs related to approximation – in terms of domestic cost levels. We have used very conservative NTM liberalization effects (e.g. 8% [-points] instead of 15% [-points] for ambitious liberalization; 4% [-points] instead of 7.5% [-points] for limited liberalization) to take this cost increase effect into account to some extent” (p. A27). Thus, the effects of compliance costs are only considered via reduced trade costs, but not in terms of production costs or other macroeconomic variables. The SIA shows significant positive effects for Moldova and Georgia due to lower SPS and TBT NTM trade costs, despite the debates on potential costs and burdens and low capacities of domestic authorities for regulatory harmonisation (Emerson et al. 2018; Messerlin et al. 2011).

The implementation of the agreements and the process of regulatory harmonisation and its effects are closely monitored.⁶ The changes in trade volumes between the EU and the three AA countries are mixed. All three countries run increasing trade deficits in absolute terms with the EU, even though EU imports from Ukraine and Moldova increased to a greater extent than EU exports between 2013 and 2019. However, despite the unilateral tariff reductions by the EU with the introduction of the AAs in 2016, exports from the EU have grown at a greater rate

⁶ See <https://3dcftas.eu/publications/> for current publications on the Ukraine, Moldova and Georgia AAs.

than imports. In the case of Georgia, exports to the EU have even declined. Generally, export from these three countries are concentrated on a small number of EU member states in a small number of product categories, even up to 5 years after the AA was completed (Akhvlediani et al. 2020). In Ukraine, there is more trade with China than there is with the EU, with China having become Ukraine’s main export and import partner in 2019.

Figure 3: EU trade with Ukraine, Moldova and Georgia (in billion EUR)



Source: Eurostat

All three AA partners have experienced substantial problems in harmonising their regulatory frameworks, despite this process having already begun with the ENP action plans. In Moldova, legislative processes are rather deficient and a focus of activities lies on the establishment of a solid legislative infrastructure (European Parliament Research Services 2018). In Georgia, producers see disadvantages of compliance to EU standards, as other regional trading partners and suppliers are not aligning to EU standards (Emerson et al., 2020), and the damage to small agricultural producers has forced the country to extend the implementation period to 2027. In Ukraine, so far, only large, export-oriented companies have been able to benefit from the adoption of EU SPS regulations, particularly in large-scale agriculture, while smaller and domestic-oriented producers are adversely affected by rising costs. However, there have been some positive signs, for instance, the growth in butter exports from Ukraine, suggesting that, in general, the implementation of regulatory adjustment of SPS measures may simply be lagging behind the agreed five-year schedule in the ‘comprehensive strategies’ (European Parliament Research Services 2018).

Overall, the AAs and regulatory approximation between the EU and the three Eastern European countries have been perceived as a promising vehicle for enhancing political stability and economic development. For CEE countries, the conditions of regulatory alignment were supposed to more lenient than those normally associated with EU enlargement, as these countries have no immediate accession perspective and will, therefore, have no influence on EU-level decision-making processes. Nevertheless, in order to gain access to the EU Market, the actual adjustment required from these countries is close to full harmonisation and, despite financial and technical support from the EU for the implementation process, both public and private actors in the partner countries find it very difficult to implement the regulatory alignment, thus limiting the potential benefits of EU market access.

4. ASSESSING THE EFFECTS OF REGULATORY APPROXIMATION UNDER ALECA

The deep and comprehensive nature of the ALECA agreement demands the approximation of Tunisian regulations towards that of the EU. The rationale to close the regulatory difference between trading partners is the expectation for more trade, as no additional efforts are necessary to sell products on foreign or domestic markets, which reduces trade costs. This basic idea is also expressed in the EC's Sustainability Impact Assessment on ALECA conducted by ECORYS (2013). The study is based on a standard CGE model for a short-term and long-term scenario (which includes labour and capital reallocation among sectors), and the simulation takes into account the effects of NTM reductions and spill overs. The costs of regulatory differences are included as Trade Cost Equivalents. It is assumed that these trade costs can be reduced by up to 8 percentage points for Tunisian exports of goods to the EU and by 4 percentage points for EU exports to Tunisia.⁷ As discussed in section 2.5, the modelling approach in standard CGE models towards NTMs as trade costs generates positive effects on bilateral trade (+25 %) and growth in Tunisian GDP by more than 7 %. Almost half of the growth in national income is derived from cost reductions in NTMs on goods.

However, the ECORYS (2013) report side-lines the implications of regulatory approximation for Tunisia despite Tunisian producers having to adjust their products and production processes to meet new regulations. In the report, the associated costs of compliance for Tunisian producers to higher EU standards are first mentioned in the sectoral analysis for vegetables and fruits. The increasing costs of production and the driving out of smaller Tunisian producers would be offset by productivity growth and export opportunities (p.139-140). The issue is not addressed until the conclusion, where necessary adjustments are described as having "*significant economic, social and environmental effects in the short to medium term*" (p.198) and are termed as "*timely and costly*" (p.198) and are seen as requiring the phasing-in of tariff reductions and regulatory adjustment as well as donor support.

In this study, we explicitly address the comprehensive implications of regulatory harmonisation of Tunisia to EU standards. In order to gain facilitated access to the EU market, all Tunisian products need to comply with EU norms, meaning that producers of agricultural and food products need to undergo adjustments, independent of whether they produce for the domestic or for export markets. The alignment of NTMs, therefore, generates *specific economic activities*, which raise production costs and has wide-reaching implications for production, trade and consumption.

As the literature review has shown, the conventional treatment of NTM effects in trade assessments puts aside these complex implications of regulatory measures and frameworks on economic activities, as well as the inconclusive effects of regulatory adjustments and harmonisation on trade. In particular, the important role of compliance costs on other macroeconomic supply and demand variables is ignored (see section 2). The effects of regulatory harmonisation and approximation to EU norms are highly uneven, and in the case of the CEE countries that joined the EU in the 2000s, only selected agricultural sectors and countries could benefit significantly from the integration into the EU internal market despite substantial financial and technical assistance. The AAs with Eastern European countries illustrated the costly and difficult process of regulatory alignment and adverse effects on the country-specific development prospects (see Chapter 3).

⁷ ECORYS (2013) does not state how they derive the Trade Cost Equivalents, so the asymmetry and the magnitude of reduction are assumptions by the authors.

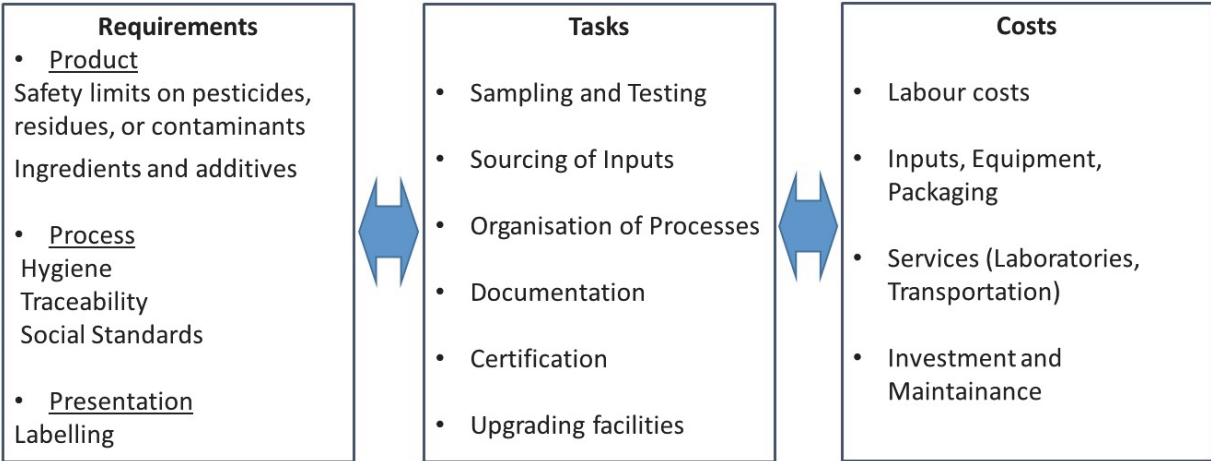
4.1. Methodological Approach

In order to derive the comprehensive macroeconomic effects of regulatory alignment demanded by ALECA in the ÖFSE Global trade model for the Tunisian agricultural and foods sectors (see details in section 4.3), we understand the regulatory adjustments essentially as a process of unilateral liberalisation. As all Tunisian producers have to adjust their production processes and facilities to comply with higher EU regulations as a precondition for enhanced access to the EU markets, the costs of selling domestically and on foreign markets increases. The only group not affected by this are existing exporters who already comply with EU regulations. In contrast, EU producers do not have to adjust. Exporters from within the EU can benefit from better access to the Tunisian market, while exporters from other countries will find it more difficult to export to Tunisia (see also Augier et al., 2014). The overall effect depends then on the ability of Tunisian exporters to increase their productivity to compensate for compliance costs.

According to Ing et al. (2016), costs imposed by NTMs for business can be classified as sourcing costs, enforcement costs, and process-adaptation costs. Sourcing costs are essentially variable costs and emerge from the switch from low-grade to high-grade intermediate products and services, as required to meet NTM regulations. In contrast, enforcement costs (associated with NTM compliance), as well as processing-adaption costs (associated with the purchase of equipment, re-design of products and processes or upgrading of facilities), tend to be seen as fixed costs (de Melo/Shepherd 2018). These one-off payments are characteristic of companies engaged in exporting and present an entry barrier for smaller companies with lower productivity (Melitz 2003). While fixed costs components are sometimes seen as sunk-costs (Maur/Shepherd 2011), they are typically linked to the hiring of white-collar workers and engineers that manage the processing on a permanent basis (Ing et al. 2016) as well as other recurring maintenance costs. NTM compliance cost can affect the number of companies that can export (extensive margin) and the volume of goods that can be exported (intensive margin) (de Melo/Shepherd 2018).

The potential costs of adjustment are based on an assessment of compliance costs of Tunisian producers in different agricultural and food sectors that currently export to the EU and have, in particular, to fulfil SPS and TBT standards (see Jakubiak et al. 2006 for a similar approach on Ukrainian exporters). Through surveys, we collected information and data on the tasks and the associated costs related to EU requirements for imports of agricultural and food products (see section 4.2.). Figure 4 shows the schematic links between requirements, tasks and costs.

Figure 4: Linking requirements, tasks and costs



Source: Own elaboration building on (Rau et al. 2010)

The requirements for agri-food exports to the EU can also be linked to policy measures and their underlying EU directives, for instance, through data in UNCTAD TRAINS or EC Trade Help Desk. These requirements lead to specific economic activities or tasks to be performed by exporters, which cause, in turn, specific costs for exporters. These costs can be classified into (i) labour costs to control and organise processes or conduct residual testing, (ii) expenditures for mandatory input or labelling, and (iii) costs for required services as well as (iv) investment in facilities. The material and services intermediates can further be differentiated into domestic and imported inputs.

Exporters typically also face border costs due to border inspections, checks and procedures. In the EU AAs with Ukraine, Moldova and Georgia, border measures are simplified and facilitated once the equivalence and correct implementation of aligned regulations is recognised by the EU (see section 3.2.). This can be included in the CGE model as NTM trade cost reductions (see details on section 4.3.). We further assume that Tunisian standards are harmonised with EU SPS and TBT regulations, similar to the three EU AA partner countries, as it increases the possibilities for recognition of equivalence and for the facilitation of border measures.

We further differentiate between tasks and costs linked to mandatory EU regulations and private standards. As EU buyers, for example, supermarkets, have developed private standards such as 'Global Gap' for fruit and vegetable products, the compliance to mandatory regulations is often still not sufficient to trade on the EU market (Maertens/Swinnen 2009). Thus, significant export effects from ALECA can only be expected when Tunisian exporters are also able to meet these private standards. The differentiation by type of regulation and standard is taken up in the different scenario designs.

There are, however, limits to our approach. The surveys for these studies are exploratory and were focused on selected companies with experience exporting to the EU. These companies have knowledge about the cost implications of complying with EU standards, even though the differentiation and quantification of cost components to the specific purposes is challenging. Nevertheless, the data received serve as a robust basis for assessing compliance costs for many exporting companies in the Tunisian agri-food sector. In the Tunisian context, several agricultural and food sectors, such as animal products or dairy, are still focused on self-sufficiency and have little to no export trade. In these sectors, large companies, which are partially subsidiaries of EU companies, already apply relatively high standards and have invested in modern production facilities. Further, the sectoral set-up of the data basis (GTAP 10 data) requires aggregation of results on a sectoral level. It would also be worthwhile to analyse the compliance costs for different types and sizes of companies, as regulatory alignment is particularly burdensome for smaller companies. However, data on company structures in the Tunisian agricultural sectors are not currently available.

4.2. Empirical Assessment of Compliance Costs

In order to understand the specific firm-level challenges of regulatory alignment with EU standards and to identify the related tasks and costs, a series of interviews with Tunisian agri-food companies was conducted in two rounds between October 2019 and October 2020. The interviews aimed (i) to identify the requirements that producers of agri-food products need to fulfil in order to export to the EU, (ii) to receive detailed descriptions of the tasks and activities related to these requirements that exporting companies needed to perform, and (iii) to quantify the costs related to these tasks and activities, based on company estimations.

The interviews focused on Tunisian companies exporting agricultural and food products to the EU. For agri-food sectors with a high level of self-sufficiency and a low level of EU trade, inter-

views were also conducted with larger Tunisian firms with more sophisticated production processes and potential experience in exports to non-EU countries. The sectors 'vegetables & fruits' and 'fishery' were selected⁸, given their importance in terms of export volumes to the EU (see section 1.2). These two sectors can be further differentiated by their underlying product categories – plant and animal – which differ in terms of production processes. These two sectors thus offer a representative insight into the remaining agri-food sectors. In the case of sectors with no or few EU exporters, interviews were conducted with companies in the dairy, animal product and meat processing sectors, all of which are important for Tunisian agriculture in terms of value-added and employment.

The assessment of tasks related to SPS and TBT regulations and their associated costs requires a high level of detail and firm-level know-how, as well as the active collaboration of managers and company experts. In total, such in-depth interviews and assessments were conducted with 18 companies, of which seven were in 'vegetables & fruits', three in 'fishery', three in 'animal products' (eggs), three in 'dairy' and two in 'livestock/meat processing'.⁹ As the selected firms are specialised in specific products within these sectors and differ in terms of sales volume and engagement in EU export trade, the selection of interview partners represents a range of company types. In order to arrive at the respective sector value for each of the relevant cost items needed for our modelling exercises, we used the average of the data values received from all interviewed firms in a sector.

Generally, the ten exporting companies interviewed in 'vegetables & fruits' as well as 'fishery' all have at least five years of experience in exporting to the EU and thus have a competitive advantage over other Tunisian producers. The main reasons to export to the EU are the higher margins that these companies can gain in the EU market as compared to trading within the domestic market, as well as long-term relations with EU buyers. Nevertheless, eight companies report that EU regulations are burdensome, perceived as too stringent and are associated with costly procedures, with two companies describing the cost burdens of complying with EU regulations as exceptionally high. Beyond EU regulations, all interviewed exporters report having to comply with private standards, such as Global GAP standards set by EU supermarkets and wholesale traders. While GlobalGAP is frequently a minimum requirement for non-EU producers, some companies reported having to fulfil even stricter buyer-specific requirements. Throughout our interviews, this differentiation of requirements and tasks related to EU regulations and private standards emerged as an important theme.

Vegetables & Fruits

The main regulatory guidelines for producers in the 'vegetables & fruits' sector are related to the control of contaminants and residues in the final export products. This requirement is, therefore, linked in the first place with the correct handling and use of agricultural inputs during cultivation. In particular, the procurement of EU-compliant fertilisers and pesticides is an important cost component. Companies also face organisational challenges in having access to updated information related to homologated pesticides and the timing of pre-harvest pesticide usage. Further, the control of contaminants is linked to testing capacities, whether in-house or from third-party laboratories, as well as appropriate documentation. EU regulations require the purchasing of packaging materials and the correct labelling of products. Compliance with the EU's strict hygiene standards requires dedicated personnel to conduct or manage associated

⁸ In the sectoral aggregation of the database underlying the model simulation in 4.3., processed fish products are included in the sector 'food & beverages'.

⁹ Studies based on standardised surveys can allow for 100+ interviews, see for instance International Trade Centre (2015). Comparable studies on compliance cost typically have a smaller sample, for instance, the oft-cited study by (Aloui/Kenny 2005) is based on five producers. Compliance cost estimations in the entire agricultural sector in the impact assessment for the EU-Ukraine AA are based on three responses (ECORYS, CASE 2007: 67).

tasks. In larger companies, engineers or technical personal are typically employed for these tasks, while in smaller firms, employees often allocate a part of their working time to compliance issues. With regard to private standards, costs for 'vegetables & fruits' companies emerge primarily from certifications, particularly for GlobalGAP and ISO 22 000 (for hygiene requirements), which require adjustment of production processes and service inputs from local certifiers. However, the compliance to GlobalGAP is primarily associated with high investment costs in facilities.

Fishery

The interviewed Tunisian companies in the 'fishery' sector export primarily to wholesalers in the EU. The exporters to the EU have to fulfil EU public regulations and private standards in relation to hygiene requirements, which are HACCP and/or ISO 22000, as a prerequisite to exporting to the EU. In addition, the exporting companies have to be listed and controlled by local and EU authorities. Exporters require a health certificate from the Ministry of Agriculture to be able to export to the EU, which guarantees their compliance with EU hygiene requirements. Under the EU's Health Certification process, third countries have to guarantee that the exported fish product fulfils EU regulations. Each exporter should be registered on the list of approved companies, as held by the respective Ministry of Agriculture. Similarly, any fishing vessels have to be registered and approved by the Ministry before they can be used to supply exporting facilities. These approvals have to be renewed and are dependent on continuous compliance with national and EU specific requirements. The EU conducts SPS standard audits in Tunisia without informing Tunisian authorities, with the last audit having taken place in 2019.

The key EU regulations in the fisheries sector are related to hygiene requirements, which include specific instruments of production, Hazard Analysis Critical Control Points and the control of safety levels of the product (e.g. microbiological criteria, histamine, contaminants). Further, the marking, packaging, storage and transportation requirements ensure permanent quality control and traceability of fishery products through a Legal Catch Certification. This certification is related to EU record-keeping requirements and aims to document the origin of all marine products arriving on the EU market¹⁰. This involves knowing where it was caught, how much was caught, when it was caught, how it was caught, and by whom, as well as confirmation that all such activities took place in compliance with a verifiable EU regulatory framework.

The tasks related to these requirements include the implementation of production processes that ensure compliance with hygiene standards and the control of these processes by employees. Strict cleaning and disinfection procedures require specific chemical inputs and services by third parties, and employees are required to attend specialised training. Further, microbiological and physicochemical analysis, which may be conducted in-house or by third-party laboratories, are mandatory. Fishery companies have to register and interact with local and EU authorities, and accountability and transparency need to be ensured by the use of record-keeping software. Technical staff need to be employed to conduct these tasks.

Other sectors

Besides EU-exporting companies, a number of other producers in Tunisia currently fulfil certain international standards. We interviewed companies across sectors with limited trade flows such as dairy, meat processing or animal products that produce for the local market or export to non-EU markets. Companies in sectors related to animals and animal products have to

¹⁰ It was introduced on 1 January 2010, whereby fisheries products must be accompanied by a Catch Certificate (CC) declaring that the catch was made in accordance with applicable laws, regulations and international conservation and management measures (Regulation (EC) No. 1005/2008)

comply with strict hygiene regulations, requiring the management, control and documentation of processes by employees and the involvement of third-party services.

Tunisia is self-sufficient in milk and poultry products. Since 1990, important steps have been taken in terms of farm management, control of poultry diseases and the creation and enforcement of professional standards. The production and marketing of fresh milk are regulated by the law 2005-95, relating to animal livestock and products for SPS standards, which mandates compliance with bacteriological and physicochemical standards. The results are analysed by the Directorate General for Agricultural Production (DGPA) and at the level of inter-professional milk group (GIVLAIT). Beyond these standards, there are some regulatory gaps related to strict hygiene requirements for the production of milk and dairy and for the transportation, storage, packaging and marking of eggs. SPS standards are controlled at the local level (milk collection centres) by the CRDA.

In the egg sector, all eggs and laying hens are sold in the state in which they are produced on the farm. Most of the production output is sold in trays of fresh, non-refrigerated eggs and distributed through intermediaries (wholesalers and semi-wholesalers). The intermediaries have trucks with normal, non-refrigerated tippers (with or without tarpaulin) and go to the farm every day or every two days to stock up. The majority of the eggs are sent to depots in large towns, from where they are delivered directly either to large customers, such as supermarkets or municipal market or to semi-wholesalers for distribution in small quantities to local grocery shops. The organised circuit of packaged eggs in Tunisia is fairly recent and is provided by six large producers or integrated groups who distribute either to franchised shop chains or ship directly to supermarkets and hypermarkets.

Although the 'milk and poultry' and 'egg' sectors are well-structured at the production level, there are still regulatory and organisational gaps in the two sectors. A major effort still needs to be made, particularly in terms of the introduction of legislation, and, above all, production and processes. These two sectors produce and sell mainly for the local market. Exports are at the margin and are mainly to destinations that do not apply strict SPS standards (Gulf countries, Libya and sub-Saharan Africa). Moreover, these two sectors are dependent on imported inputs. The dairy sector imports the bulk of its dairy cows, and the poultry sector imports laying hens and feed products. All the interviewed producers apply mainly either SPS Tunisian standards or upgraded SPS Tunisian standards close to international standards. According to those interviewed companies who also export to non-EU countries, the SPS costs are mainly related to salary costs, investments and services related to hygiene requirements, such as certification, HACCP and ISO system, and documentation.

In the meat and poultry sector, the Law 2005-95 relating to livestock and animal products is the main regulation for SPS standards in this sector. For the slaughter of animals, SPS standards on slaughter conditions, hygiene and sanitary control rules, and the presence of veterinarians are based on Decree 81-1453 of 10 November 1981 on slaughter and health inspection for red meat slaughterhouses and on the decree of 6 August 1996 for industrial poultry slaughterhouses. The texts which currently regulate the hygiene requirements for slaughter processes, the preparation treatment, self-checking in the poultry meat production chain and poultry meat products are obsolete and need to be upgraded to international standards, as highlighted by the Ministry of Agriculture.

Poultry production in Tunisia is based on a very particular system, namely the programming of production on a national scale. This programming is essentially based on planning through the restriction of imports of broiler breeders and layers. There is a whole battery of SPS standards to be respected, but there is great variability in the implementation and control of sanitary rules and rules for cleaning, disinfection and biosecurity, which are not always respected. Producers must ensure that the allocation of import quotas for breeding stock is subject to official hygiene

and sanitary control by the authority's veterinary services and that hygiene obligations are met in terms of the layout of livestock buildings and infrastructure.

Overall, the interviews have been explorative in the sense that they provide insights into firm-level processes that are associated with regulatory compliance. The number of interviews is, therefore, relatively limited, as it requires time and close cooperation with companies to gain insights into the detailed processes, to differentiate between tasks by EU regulations and private standards and to derive robust estimations of related costs. As we have concentrated on large companies with established export experience, the cost estimates from the survey should be considered as a conservative indication of the compliance costs to be borne by new and smaller firms once they start to export to the EU as a consequence of agricultural trade liberalisation under ALECA.

4.3. Quantitative Assessment

The ÖFSE Global Trade Model

The applied ÖFSE Global Trade Model is a structuralist Computable General Equilibrium (CGE) model. The major difference between this model and standard CGE models is the macroeconomic causality applied. In the ÖFSE Global Trade Model, output and income are determined by aggregate demand rather than through a neoclassical clearing labour market. In other words, the underlying macroeconomic model is that of an income-expenditure framework rather than a full-employment model (Raza et al. 2016a).

Standard, neoclassical trade CGE models presume to be based on microeconomic theory. Their focus lies on the reallocation of economic activity across sectors instead of aggregate activity levels. Economic gains then emanate from productivity increases through such reallocation effects, in combination with price decreases. Similarly, they assume a constant public deficit and thus do not assume revenue effects from trade policy changes – the public household is just an extension of the optimal allocation of the aggregate household. In consequence, standard CGE models speak neither to employment nor to public balance effects of trade policy, even though these are arguably of central importance.

The ÖFSE Global Trade Model seeks to address these weaknesses by shifting the focus. A multi-sectoral income-expenditure framework determines equilibrium in the goods market, and employment levels follow therefrom, given labour productivity changes. Wages, in turn, are functions of labour market tightness, and prices are mark-ups on intermediate, import and labour costs. In this sense, macroeconomic causality conforms to an AS/AD structure in which, firstly, demand determines output, and output drives employment and, secondly, wages and prices are the outcome of bargaining in a non-clearing labour market.

A neoclassical model assumes a full employment steady state and focuses on sectoral reallocation but does not claim to describe the adjustment path towards such an equilibrium. The income-expenditure framework, in contrast, assumes under-employment and focuses on demand effects but does not claim to describe a full-employment equilibrium. One could thus consider the resulting equilibrium as a medium-run Keynesian under-equilibrium, at best, on the path towards the ultimate new full-employment equilibrium.

The model causality assumes that the immediate effect of policy and resulting price changes is a change in expenditures. Only in the very long run, and only if there are strong tendencies towards full employment-steady states, does the reallocation equilibrium, supported by the necessary price changes, come about. When that happens, and whether it does at all, remains unclear. See also Raza et al. (2016) for further details on the model.

The model has been applied for the assessment of various FTAs, including DCFTAs such as the EU-USA (TTIP) (ibid.), EU-Canada (CETA) (Raza et al. 2016b), Trade in Services Agreement (TiSA) (Raza et al. 2018), EU-Vietnam (Grumiller et al. 2018c), the Economic Partnership Agreement (Grumiller et al. 2018a; Tröster et al. 2020) as well as on the ALECA agreement (Grumiller et al. 2018b).

Integration of compliance and trade costs

Based on the literature, the information on SPS and TBT requirements and task as well as the conducted survey, we differentiate between three different sources of compliance costs that emerge when companies export their products to the EU: (i) employment, (ii) intermediate product inputs, and (iii) intermediate service inputs.

Compliance with standards is linked to different tasks that have to be fulfilled within companies, ranging from documentation or quality controls to testing of residuals. As shown in the insights from the surveys, this requires the utilisation of working time of existing employees or the recruitment of additional staff. In most sectors, the export of products to the EU entails the use of intermediate products in the production process, for packing products, or for cleaning products for processing facilities. Further, services such as laboratory testing, transportation or certification are required. These products and services can be sourced domestically or must be imported. In this study, we do not address the effects of one-off investment expenditures, which would be necessary for equipment and facility upgrades and which cause higher fixed costs. A detailed analysis of the impact of fixed costs on the structure of companies in a sector would require company-level data on producers in the agricultural and food sectors, which are currently not available. The survey also reveals a substantial share of investment expenditures linked to compliance with private standards, which is not affected by ALECA.¹¹

Generally, the costs from these specific economic activities are defined as costs incurred when exporting to the EU, but not in the production for the domestic market or for other export destinations with other standards than the EU norms. We, therefore, assume that all Tunisian producers within a given agri-food sector would be subject to compliance costs for products exported to the EU in that specific sector, regardless of their intention to export to the EU or not. This is possible by adjusting the sectoral data parameters in the underlying social accounting matrix (SAM) to the cost structure of exporting companies, as assessed in the surveys. The increase in these different costs has different implications on the endogenous variables of the model such as income, imports/exports, as well as aggregate demand, which depends on several factors such as the sector-specific requirements and input-output structure, as well as the share of domestic and imported intermediates. Further, the survey results allow us to assign the additional costs to mandatory EU regulations and to private-sector standards. Overall, the combination of changes in these costs determines the total net effect of the introduction of compliance costs.

Changes in border costs depend on the successful implementation of regulatory harmonisation on the Tunisian side. Once recognised as equivalent by the EU, Tunisian products face fewer border inspections and procedures, leading to reduced mutual trade costs. In standard CGE applications, these border trade cost reductions are part of the reductions in AVE from NTMs and behind-the-border measures. These AVEs are differentiated into rent-generating and cost-generating components; the former implies a lack of competition and hence higher mark-ups for companies, resulting in higher prices and rents for local actors (Maur/Shepherd, 2011), while the latter is conceived of as 'iceberg trade costs', which are presumed to imply 'pure friction' with no income counterpart. When adjusted, these rent-generating NTMs trigger a loss

¹¹ In this study, we also do not address producer and consumer subsidies or other price policies for agri-food products in the model.

of income with distributional effects due to lower mark-ups and profit flows. The ÖFSE Global Trade Model focuses on rent-generating NTMs. A simple, straightforward and transparent strategy is to model NTMs analogous to tariffs. Tariffs are a cost barrier for producers whilst also generating revenue for the government. That revenue, in turn, represents leakage in the form of public savings in the macroeconomic balance equation. In analogous terms, NTMs generate income for the private sector, and represent a leakage in the form of private savings in the macroeconomic balance equation.

Data structure and calibration

The data used in this model are based on the most recent version 10 of the GTAP dataset, which contains data for the base year 2014. We aggregate the available sectoral and country data to 20 sectors and 11 regions. The sector aggregation focuses on agricultural and food sectors (sectors 1 to 11) and the main manufacturing sectors – chemical (13) and packing (14) – as well as a services sector (18) that provides intermediary inputs to the sectors listed previously (Table 8). The service sector includes the GTAP sectors business services, communication and government services, while the sectors other agriculture (12) includes other agricultural productions such as fibres and forestry (see Appendix Table A1 for further details).

Table 8: Sectoral Aggregation

	Sectors	Share in Value Added	Share in Agri-VA	Share in Agri-Exports	Share in Agri-Imports	TUN Tariffs on EU Prod.	EU Tariffs on TUN Prod.
1	Grains	0.9%	7.4%	0.3%	35.8%	23.3%	0.0%
2	Vegetables & Fruits	4.1%	34.2%	28.2%	3.6%	16.4%	6.9%
3	Oil Seeds	0.5%	4.0%	0.0%	12.3%	4.0%	0.0%
4	Cattle	0.4%	3.6%	0.3%	1.3%	22.3%	0.0%
5	Animal Products	0.6%	5.3%	0.9%	0.8%	22.9%	0.0%
6	Raw Milk	0.4%	6.2%	0.0%	0.0%	0.0%	0.0%
7	Fishing	0.3%	4.5%	3.6%	1.5%	34.5%	0.0%
8	Meat Processing	0.7%	11.4%	1.1%	1.2%	14.2%	0.0%
9	Vegetable Oils	0.1%	1.9%	27.4%	13.2%	2.5%	48.4%
10	Dairy	0.3%	5.7%	4.4%	2.0%	14.4%	3.1%
11	Food & Beverages	0.9%	15.8%	33.7%	28.4%	11.6%	2.7%
12	Other Agriculture	0.5%				3.5%	0.3%
13	Chemicals	0.6%				0.0%	0.0%
14	Packing	0.5%				0.0%	0.0%
15	Machinery	1.3%				0.0%	0.0%
16	Petro	0.0%				0.0%	0.0%
17	Other Manufacturing	4.2%				0.0%	0.0%
18	Services	6.5%				0.0%	0.0%
19	Other Services	28.4%				0.0%	0.0%
20	Extractive Industries	2.0%				0.0%	0.0%
	Agri-Share (sectors 1-11)	9.2%		6.9%	9.9%		

Source: authors' aggregation based on the GTAP 10 database

As a whole, the agricultural sectors 1 to 11 account for a share of 9.2 % of total Tunisian value-added, with the sectors ‘vegetables & fruits’ (34.2 %), ‘food & beverages’ (15.8 %) and ‘meat processing’ (11.4 %) dominating value added in the agricultural and related processing sectors. The agricultural sectors can further be classified in plant growing sectors (1 to 3), sectors engaged with livestock farming and animal products (4 to 7) and processing sectors that use inputs from other agricultural sectors (8 to 11). The three categories of agricultural sectors also show distinct input patterns. With regard to exports, the main export sectors of agricultural products are ‘vegetable oils’ (olive oil), ‘food & beverages’ (including processed fish), and ‘vegetables & fruits’. On the import side, the main products are grain and foodstuffs. Other sectors, such as ‘meat processing’ and ‘dairy’, are only minimally engaged in cross-border trade, focusing instead on meeting local demand. Most agricultural sectors in Tunisia still levy tariffs, with tariff rates up to 34.5 %. In contrast, tariff and quotas on the EU side are concentrated on ‘vegetables & fruits’ and, in particular, on olive oil (see also details on the Tunisian agricultural sector in section 1).

The regional aggregation focuses on Tunisia and the EU. The EU is further differentiated into Southern and Northern EU Member States due to higher similarities in the agricultural product portfolio between Tunisia and the Southern EU countries, for instance, with regard to fruits and olive oil (see Table 9). Further, trade between Tunisia and SEU countries is substantially higher in agricultural and manufactured goods compared to the NEU region.

Table 9: Regional Aggregation

Regions	Selected Countries
1) Tunisia	
2) Southern EU (SEU)	Cyprus, France, Greece, Italy, Malta, Portugal, Spain
3) Northern EU (NEU)	Other EU Member States
4) Northern Africa (NAfr)	Egypt, Morocco, other
5) Middle East (ME)	Incl. Turkey
6) Eastern Europe (Europe)	Ukraine, Belarus, Russia
7) Sub-Saharan Africa (SSA)	
8) South & South-East Asia (SEAsia)	China, India
9) Northern America (NAmerica)	USA, Canada, Mexico
10) Latin America (LatinAmer)	Incl. Caribbean
11) ROW	

Source: authors' aggregation based on the GTAP 10 database

Import elasticities, that is, the degree to which imports react to changes in trade costs, are taken from the GTAP database and trade-weighted according to the sectoral aggregation.

Scenarios

In our simulation design, we focus on three main aspects of DCFTAs: i) the macroeconomic and sectoral effects of compliance costs in agricultural and foods sectors, ii) the combined effects of compliance costs and tariff liberalisation, and iii) the additional effects of changes in productivity in the Tunisian agriculture and bilateral NTM trade costs. As all these different aspects come together once the EU and Tunisia enter into a DCFTA, we combine these issues in our design to investigate the aggregate effects. The simulations do not include policy changes and compliance costs in manufactured and services sectors. However, these other

sectors can be affected directly as their intermediary inputs to the agricultural and foods sectors can affect output and trade, or indirectly through multiplier effects.

Scenario 1: Compliance Costs

A first scenario assesses the effects of compliance costs to EU regulations and private standards to which Tunisian producers have to adjust. As discussed above, we assume that Tunisian regulations are unilaterally harmonised with EU norms in order to gain enhanced access to the EU market. This harmonisation requires adjustment of products and production process by all Tunisian producers in a given sector. As a benchmark for the required adjustments and the associated costs, we use data received from interviews with Tunisian producers that export to the EU and in some sectors, from interviews with large domestic companies that produce for the local market and export to non-EU countries. These companies were asked to estimate the costs for tasks and requirements necessary to export to the EU. These absolute cost components were then set in relation to the three-year average value of exports to the EU of the individual exporting companies or relative to average sales volumes in the case of closed sectors. The average ratios of the identified sources of compliance costs – employment, intermediate products and services – in the analysed sectors were applied to the remaining agricultural and foods sectors according to products and production structures.

The compliance costs are further differentiated according to whether they are related to EU regulations or to private standards. While compliance with EU regulations is a necessary condition for facilitated market access to the EU, most importers have to fulfil standards set by private buyers in order to export to the EU. As shown for the cases of EU AAs with non-EU countries in Eastern Europe, border procedures will only be facilitated once the EU recognises the equivalence of Tunisian standards to those of the EU. As such, we simulate the effects of compliance costs for Tunisian agriculture without immediate export reactions in this first scenario.

The overall impact of compliance with EU regulations and private standards can be broken down into different cost elements. In compliance with EU regulations, an initial source of additional costs in the production for the EU market is caused by additional tasks such as documentation, management of processes or testing procedures, depending on the sector. According to the firm-level surveys, these tasks cause companies in the 'vegetable & fruits' sector to spend up to 5 % of sales for wages of employees engaged in these processes. In sectors in which larger companies dominate the Tunisian market, such as the 'dairy' sector, these labour costs are smaller relative to sales with around 2.5 %. We also apply lower labour cost changes in the 'vegetable oils' and the 'food & beverages' sectors, in which a higher share of companies already exports to the EU and produces offshore. Based on the survey's insights on the different tasks, 80 % of these additional labour costs are allocated to compliance with EU regulations. In the simulation exercise, the required labour costs are expressed in the form of lower labour productivity, which increases labour and wages.

Secondly, compliance with EU regulations in agricultural and food sectors requires higher expenditures on intermediate inputs from the chemical sector. While these additional input costs in the 'vegetable & fruit' sector and other plant growing sectors are mainly caused by fertilisers, pesticides, fungicides and insecticides allowed under EU regulations, sectors producing animal products (fish, eggs) and food processing sectors (dairy) have to focus on hygiene conditions, which requires chemical inputs for cleaning and for laboratory testing, and so on. Compared to the cost breakdown in the SAM, compliance to EU regulations by all Tunisian producers would double the cost-share for chemical inputs for plant and animal sectors, while the share in processing sectors would increase by 50 % to 75 %, with most of these specific inputs being imported from the EU. In the simulation exercise, the intermediate inputs from the chemical sector to the agricultural sectors and the corresponding trade flows are adjusted.

Thirdly, exporting to the EU requires specific services, in particular testing of residuals by laboratories but also expenditures for software products for documentation and transparency. Larger companies also run their own laboratories, which reduces the need for external services but instead increases internal costs. Again, on the basis of the survey data, we adjust the respective cost shares by 75 % (and 50 % to 67 % in processing food sectors). These inputs are, however, mainly sourced locally. In the simulation exercise, the intermediate inputs from specific services sectors (such as business services, communication and public services) to the agricultural sectors are adjusted.

The compliance to private EU standards in agricultural and food sectors is linked to additional tasks of employees, which causes an increase in labour costs (or a reduction in labour productivity) by 1 % in a given sector, once all companies have to conduct these tasks (lower changes apply again to processing sectors). Further, private standards require additional expenditures for specific packaging and containers for storage and transportation, which increases the cost shares of intermediate inputs from the packing sectors (plastics and paper) by one third (and by 10 % to 20 % in processing sectors). Finally, compliance with private standards requires specific services, in particular, certification by local auditing companies. These additional services for EU exports increase firm expenditures for services inputs by 25 % (and by 10 % to 20 % in processing sectors). In the simulation exercise, the corresponding cost components – labour productivity, packing and services inputs – are adjusted.

All inputs to Scenario 1 are summarised in Table 10. The overall effects of compliance costs are derived by the combination of all single cost components.

Table 10: Adjustment of Cost Components Scenario 1 (in %)

	Grains	Veg & Fruits	Oil Seeds	Cat-tle	Animal Prod.	Raw Milk	Fish-ing	Meat	Veg. Oils	Dairy	Food & Bev
EU Regulations											
Labour Productivity	-4	-4	-4	-4	-4	-4	-4	-4	-2	-2	-4
Chemicals	100	100	100	100	100	100	100	100	50	50	75
Services	75	75	75	75	75	75	75	75	50	50	67
Private Standards											
Labour Productivity	-1	-1	-1	-1	-1	-1	-1	-1	-0.5	-0.5	-1
Packing	75	75	75	75	75	75	75	75	50	50	67
Services	33	33	33	33	33	33	33	33	10	10	20

Source: authors

Scenario 2: Tariff liberalisation

In the second scenario, the simulations of compliance costs are related to the effects of tariff liberalisation. While bilateral tariffs and quotas on trade in manufactured goods between Tunisia and the EU were already eliminated after 1995 as part of the AA, tariffs, tariff quotas and entry price regimes are still in existence in agricultural sectors. As discussed in section 1.3, the level of tariff protection in Tunisia is higher than in the EU, which puts the higher burden of tariff liberalisation on the Tunisian side. The EC, therefore, offers an asymmetric liberalisation of tariffs under which EU tariffs would decline with the implementation of the DCFTA, while Tunisia can gradually lower its tariffs and define sensitive products to be exempted from tariff liberalisation under the negative list approach.

Firstly, therefore, we simulate a unilateral liberalisation by the EU and explicitly discuss the potential effects of the elimination of the EU tariff quota on Tunisian olive oil. Secondly, the

effects of both a 50 % tariff reduction and a full elimination of tariffs by Tunisia, respectively, are simulated in combination with tariff liberalisation on the EU side. All tariff liberalisation simulations build on the compliance cost scenario.

The sectoral results highlight those Tunisian sectors that are sensitive to tariff reductions, and the overall results indicate the possible degree of tariff liberalisation that should be compatible with balanced liberalisation effects.

Scenario 3: Full market access

The third scenario incorporates a further aspect of ALECA based on the results of Scenario 2 and investigates the effects of productivity increases and the reduction of NTM trade costs in different constellations. As discussed in Chapter 3, it is commonly assumed that regulatory harmonisation increases productivity in the trade partner countries when they adapt to more stringent EU standards. Overall productivity increases, in particular, when larger and more productive companies can use the preferential access to EU markets, while smaller, less productive companies drop out of the market. This also leads to lower production prices and thus lower relative prices for Tunisian products on export markets. Further, the adjustment of regulations in the partner country facilitates border procedures, as the equivalence of product standards makes checks for the quality of products redundant. These border effects are simulated as reductions of trade costs on exported goods on both sides. In contrast to standard CGE models, we relate these NTM trade cost reductions to border costs only, and we define these costs as rent-generating (see model description above).

By integrating productivity and NTM trade cost changes with compliance costs and tariff simulations, the interrelations of these processes become apparent. Only when complying with both EU public and private regulations, can Tunisian exporters benefit from enhanced market access. At the same time, EU products will also enjoy reduced NTM costs when exported to Tunisia. It is possible, therefore, to investigate the extent to which productivity in Tunisian agriculture would need to increase above the productivity changes in the EU in order to generate positive effects for Tunisia from ALECA. For this purpose, labour productivity in the agricultural sectors is increased after compliance processes and tariff liberalisation by 5 %, 10 % and 15 %, respectively, and we simulate the effects of different NTM cost reductions.

Results

In the following, the simulation results are reported for the agricultural sectors and for the Tunisian economy as a whole. The aggregated results for the agricultural sectors refer to the combined outcomes in sectors 1 to 11. The reporting focuses primarily on Tunisia, as changes in the EU and other regions are marginal due to the marginal weighting of Tunisia in EU trade.

Scenario 1: Compliance Costs

The costs of compliance with EU regulations and private standards are based on adjustments in labour productivity and stricter requirements for specific manufactured and service inputs. These changes are burdensome for all Tunisian producers in the agri-food sectors, with adverse effects for value-added.

Table 11: Effects of Compliance Costs on Agri-Sector

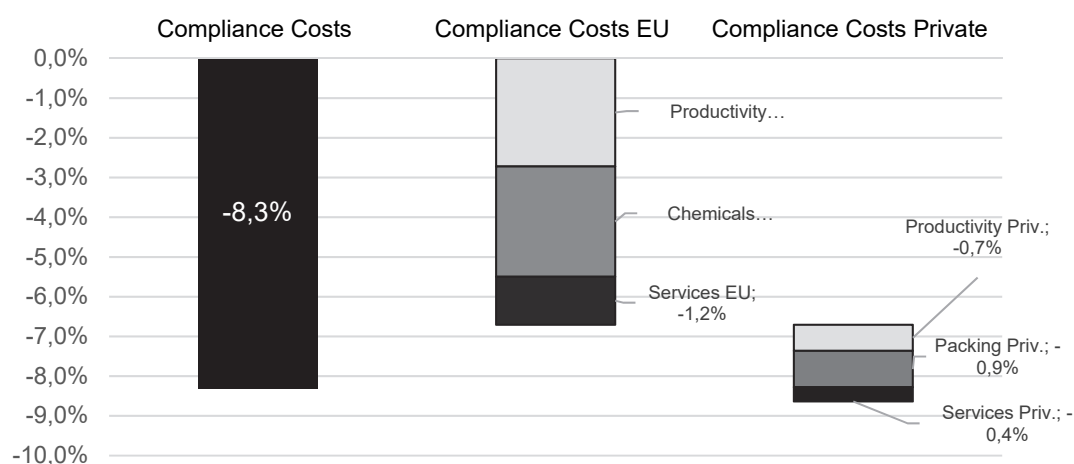
	Compliance Costs	EU Regulations	Productivity EU	Chemicals EU	Services EU	Private Standards	Productivity Priv.	Packing Priv.	Services Priv.
Agri-VA	-8.3%	-6.5%	-2.7%	-2.8%	-1.2%	-1.9%	-0.7%	-0.9%	-0.4%
Agri-L	-2.7%	-2.1%	1.4%	-2.6%	-1.0%	-0.6%	0.3%	-0.7%	-0.3%
Agri-Con	-2.5%	-2.0%	-1.7%	-0.4%	0.0%	-0.5%	-0.4%	-0.1%	0.0%
Agri-Exp	-3.3%	-2.7%	-2.8%	0.0%	0.0%	-0.7%	-0.7%	0.0%	0.0%
<i>to EU</i>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Agri-Imp	-4.0%	-2.8%	0.5%	-2.1%	-1.1%	-1.2%	0.1%	-1.0%	-0.3%
<i>from EU</i>	-3.7%	-2.5%	0.6%	-2.0%	-1.1%	-1.1%	0.2%	-1.0%	-0.3%

Source: CGE modelling calculations

The harmonisation with EU regulations and private standards, which is a precondition for enhanced access to the EU market, results in a total decline of 8.3 % in agricultural value added (Agri-VA) (see Table 11). Employment (Agri-L) shrinks by 2.7 % and consumption in agricultural sectors (Agri-Con) by 2.5 %, which is linked to lower incomes. Agricultural exports (Agri-Exp) decrease by 3.3 % due to lower exports to non-EU regions, in particular to countries in Northern Africa and the Middle East, as existing exports to the EU are set to be unaffected by compliance costs for all other Tunisian exports. On the other side, imports are also reduced due to lower consumption and value-added.

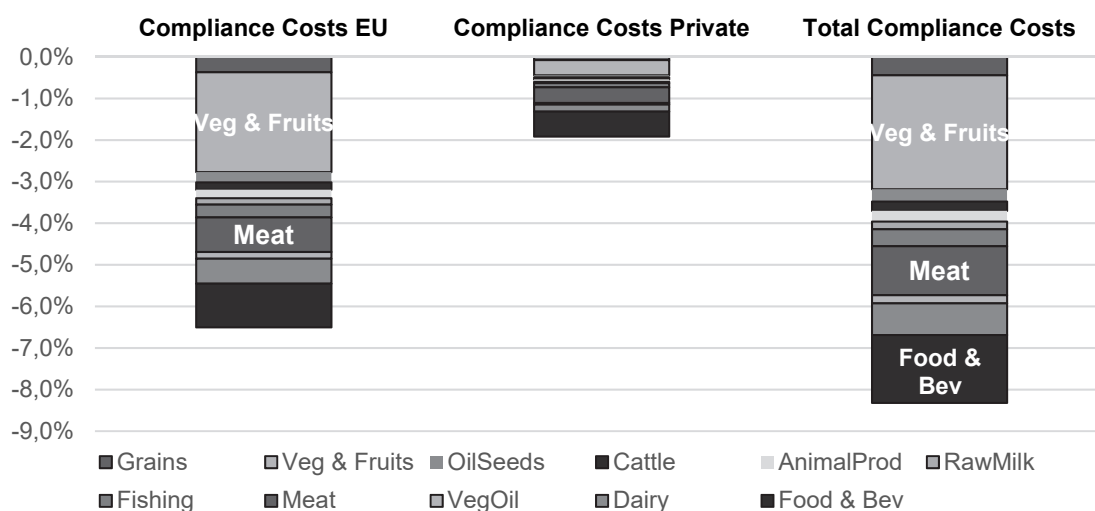
The different components of the compliance costs have diverse effects, and results for individual cost elements can differ from the aggregate effects. The compliance with EU regulations causes larger combined effects in value-added (-6.5 %) than compliance with private standards (-1.9 %) (Figure 5). In both cases, changes in labour productivity increase employment but reduce consumption, while the higher relative prices for Tunisian products depress exports and increase imports (see Table 11). Higher input costs for chemicals, packing and services have negative effects on value-added and on imports in agricultural sectors.

Figure 5: Changes in Agri-VA Compliance Costs



Source: CGE modelling calculations

Figure 6: Changes in value added by Agricultural Sectors



Source: CGE modelling calculations

The overall changes are mainly driven by effects in the dominating agricultural sectors with the highest share in value-added in the base year (see Figure 6). In particular, the sectors 'vegetables & fruits', 'food & beverages' and 'meat processing' show the largest relative changes.

Table 12: Sectoral changes in selected variables total compliance costs

Sectors	VA	L	Con	Exp	M	xi	Px	Py	w
1 Grains	-6.0%	-0.4%	-1.7%	-4.8%	-2.0%	-5.6%	1.5%	7.3%	0.0%
2 Veg_Fruits	-8.0%	-2.4%	-3.8%	-5.0%	0.2%	-5.8%	4.7%	7.4%	-0.2%
3 OilSeeds	-7.3%	-1.7%	-2.2%	-2.2%	-2.1%	-5.7%	2.3%	7.4%	-0.2%
4 Cattle	-6.1%	-0.6%	-3.6%	-6.2%	2.6%	-5.6%	4.6%	7.3%	-0.1%
5 AnimalProd	-4.9%	0.6%	-3.8%	-3.8%	1.1%	-5.5%	4.8%	7.3%	0.1%
6 RawMilk	-3.0%	2.4%	-4.2%	-10.7%	17.6%	-5.3%	5.4%	7.3%	0.2%
7 Fishing	-9.1%	-3.4%	-3.4%	-1.3%	-4.3%	-5.9%	4.3%	8.7%	-0.3%
8 Meat	-10.3%	-4.6%	-4.4%	-13.2%	13.5%	-6.0%	5.7%	8.7%	-0.5%
9 VegOil	-10.5%	-7.2%	-1.5%	-2.5%	-6.5%	-3.6%	1.3%	3.9%	-0.7%
10 Dairy	-13.4%	-9.9%	-1.8%	-5.1%	-7.8%	-3.9%	1.7%	3.8%	-1.0%
11 Food Bev	-10.3%	-6.1%	-2.2%	-2.2%	-7.5%	-4.5%	2.3%	5.3%	-0.6%
12 Other Agriculture	-0.9%	-0.9%	-0.7%	-0.2%	-0.5%	-0.1%	0.2%	0.0%	-0.1%
13 Chemicals	0.8%	0.8%	-0.7%	-0.2%	5.4%	0.1%	0.1%	0.0%	0.1%
14 Packing	0.6%	0.5%	-0.7%	-0.2%	2.4%	0.1%	0.1%	0.0%	0.1%
15 Machinery	-0.4%	-0.4%	-0.7%	-0.2%	-0.2%	0.0%	0.1%	0.0%	0.0%
16 Petro	-0.4%	-0.4%	-0.6%	0.0%	-0.4%	0.0%	0.0%	0.0%	0.0%
17 Other Manufacturing	-0.5%	-0.5%	-0.7%	-0.2%	-0.3%	-0.1%	0.1%	0.0%	0.0%
18 Services	0.8%	0.7%	-0.7%	-0.1%	7.3%	0.1%	0.1%	0.0%	0.1%
19 Other Services	-0.3%	-0.3%	-0.8%	-0.5%	0.1%	0.0%	0.2%	0.0%	0.0%
20 Extractive Industries	-0.3%	-0.3%	-0.7%	-0.4%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: CGE modelling calculations

The changes in the single sectors vary, as reported in Table 12, for the combined costs of compliance. Even though relative compliance costs in processing sectors (8 to 11) are lower compared to other agricultural sectors, relative declines in value-added and, thus, employment costs (L) are larger compared to other sectors. This is related to the input structure as processing sectors take in more expensive agricultural goods (higher Px in Table 12 from upstream sectors and to the relatively small share of value-added in comparison to inputs. Higher compliance costs affect sectors that have a focus on supplying the local market, such as raw milk and meat, as imports from the EU increase due to the adverse effects on domestic prices. Even though compliance costs are simulated for agricultural sectors only, the input sectors 'chemicals' (13), 'packing' (14) and 'services' (18) show increases in value-added and imports due to higher demand from the agricultural sectors. This also influences the effects on the overall Tunisian economy, as reported in Table A2 in the Appendix.

Scenario 2: Tariff Liberalisation

In the second scenario, the effects of compliance costs are related to tariff liberalisation. As already shown in Grumiller et al. (2018b), unilateral tariff reductions by the EU for Tunisian agri-food products has an overall positive effect on the Tunisian economy due to higher exports to the EU when simulated in isolation from other policy changes. In combination with the compliance costs and applying tariff rates as given in the GTAP 10 database, unilateral tariff reductions from the EU side can ease the adverse effects from compliance costs adjustments as Agri-VA declines by 6.0 % (see Figure 7 'Unilateral Tariff Liberalisation & CC') compared to 8.3 % in the compliance costs scenario, but they are not sufficient to generate a significant balancing impact.

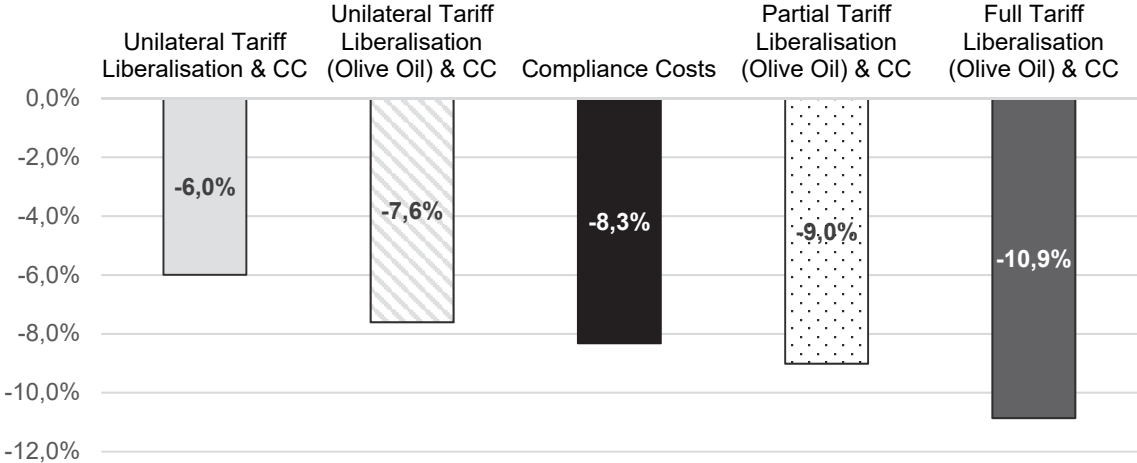
The information from the first rounds of ALECA negotiations emphasises, however, that tariff liberalisation will also take place on both sides (see also details in section 1.3.) Considering the higher level of tariff protection in Tunisia (AVEs of 32 % vs 12 % in the EU see also Rudloff (2020)), full liberalisation of tariffs on Tunisian agri-food products would generate adverse effects. Therefore, the EC has proposed an asymmetric and progressive opening of tariffs, with a transition period of up to 10 years for tariff reductions in selected products, while EU tariffs would be eliminated with the start of the agreement. Moreover, Tunisia can explicitly put sensitive products on a negative list to protect them through tariff quotas instead of tariffs. Thus, the ALECA negotiation process on tariff liberalisation involves a trade-off on the Tunisian side between the potential benefits from tariff and quota elimination from the EU side and potential adverse effects from Tunisian tariff reductions, which also includes reduced public revenues from tariff liberalisation. Moreover, the impact of subsidies and domestic support measures in the EU is relevant in this context (Chandoul/Ben Rouine 2019).

The largest potential for benefits from EU tariff and quota liberalisation is related to the removal of the existing tariff quota on olive oil as the major agricultural export product of Tunisia. As of 2006, the EU grants Tunisia tariff-free imports for up to 56,700 tonnes of olive oil (bottled and bulk) per year and applies a fixed Euro amount per 100 kg for volumes above this threshold depending on the quality and packaging of the product.¹² Even though Tunisia has only been able to exploit the quota volumes in 4 of the last 15 years, in particular, because of the administrative burdens emanating from the EU regulations (Grumiller et al. 2018b), export volumes in excess of the quota are exported duty-free if used for inward processing in the EU. Thus, almost all Tunisian olive oils enter the EU without tariff levies, but the quota system specifically restricts the import of bottled olive oils that generate higher value-added (ibid.; Rudloff 2020).

¹² For instance, extra virgin olive oil in containers holding 5 litres or less (CN 1509 10 20 10) are charged at EUR 124.50 / 100kg above the quota volume (see [EU TARIC database](#)).

The translation of these complex quota regulations into tariff rates used in CGE model simulations is notoriously difficult. Despite the actual high level of duty-free trade flows of Tunisian olive oils, the GTAP database sets the tariff rate equivalent in Southern EU countries for vegetable oils from Tunisia at 48.4 % (base on ITC Market Access Map data). This is approximately equivalent to the rate that would apply if the absolute EUR duties per 100kg were levied on all olive oil imports.¹³ In the model simulations, such a high rate of protection generates very large trade effects due to the substantial changes in relative prices. When applying the GTAP tariff rates, the simulation results from EU tariff liberalisation are consequently largely driven by increasing exports of ‘vegetable oils’ to the EU in the order of +250 %, which is close to the export effects reported in the EU SIA (ECORYS 2013). Such a result further suggests that the production of olive oils is not constrained by other factors such as water availability (Ben Rouine 2018; Grumiller et al. 2018b). We consider these estimations unrealistic and instead simulate the effects of EU tariff and quota liberalisation, applying a halved GTAP tariff rate equivalent of 24.2 % for NEU and SEU. The overall effects for this scenario (Unilateral Tariff Liberalisation (Olive Oil) including compliance costs (CC)) show that Agri-VA is reduced by 7.6 %, as export effects in ‘Vegetable Oils’ are lower (see Figure 7 and sectoral trade effects in Table A3 in the Appendix). It is, therefore, highly important to scrutinise the potential effects that can be expected from such a quota removal in olive oils, but also from changed tariff quotas on other agricultural products.

Figure 7: Changes in Tunisian Agri-VA in Tariff and Compliance Costs Scenarios 2



Source: CGE modelling calculations

Even though the timing of tariff liberalisation between the partners is suggested to be asymmetric, ALECA will eventually reduce tariffs on the Tunisian side. Full tariff elimination on both sides would generate overall negative effects for Tunisian agriculture. In combination with the compliance costs, this amplifies the adverse effects on value-added to agricultural sectors with a change of -10.9 % (Figure 7), as most agricultural sectors face higher imports from the EU with no tariff protection, which is not compensated for by increased exports, as the level of EU tariffs in place is generally lower. For instance, imports from the EU to the Tunisian sectors ‘meat’ and ‘dairy’ increase by more than 100 %, although this increase is relative to a very low starting point (see Table A3 in the Appendix for all sectoral effects in TUN-EU trade). Similar to exports, overall effects on the import side are concentrated on the ‘grains’ sectors, in which

¹³ For olive oil price, see for instance, Mercier (2018) in Rudloff (2020).

Tunisia is dependent on imports of durum wheat. A full tariff liberalisation would further increase the dependence on imports.

The exemption of sensitive Tunisian products is supposed to avoid such negative effects, although it remains unclear as to what extent products can be exempted. A scenario in which 50 % of Tunisian tariff rates can be maintained (and olive oil quota effects are muted) reveals that such a partial liberalisation would not be enough to counterbalance the adverse effects from tariff liberalisation and reduce Agri-VA by 9.0 % (Figure 7).

A sectoral break down of weighted Agri-VA effects in the different tariff scenarios (including compliance costs) shows that the largest range of effects from tariff liberalisation can be expected in the Tunisian sectors 'grains' as well as 'meat' and 'dairy', as these sectors enjoy relatively high tariff protections and face difficulties in adjusting to EU regulations (Table 13). Further, the overall results are also sensitive to the level of actual protection in the vegetable oils sector, which is also linked to the 'oil seeds' sector as the source of olives. The discussions on potential exemptions of Tunisian products from tariff protection should, therefore, also explicitly take into account the interactions between input-providing and processing sectors.

Table 13: Changes in sectoral Tunisian Agri-VA in Tariff and Compliance Costs Scenario 2

	Unilateral Tariff Lib- eralisation & CC	Unilateral Tariff Liber- alisation (Ol- ive Oil) & CC	Compliance Costs	Partial Tariff Liberalisa- tion (Olive Oil) & CC	Full Tariff Liber- alisation (Olive Oil) & CC	Diff. (Full - Uni)
Grains	-0.3%	-0.4%	-0.4%	-1.0%	-1.6%	-1.3%
Veg & Fruits	-2.4%	-2.6%	-2.7%	-2.7%	-2.8%	-0.5%
OilSeeds	0.7%	0.0%	-0.3%	0.0%	0.0%	-0.7%
Cattle	-0.2%	-0.2%	-0.2%	-0.3%	-0.4%	-0.2%
AnimalProd	-0.2%	-0.3%	-0.3%	-0.3%	-0.3%	-0.1%
RawMilk	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.1%
Fishing	-0.4%	-0.4%	-0.4%	-0.4%	-0.5%	-0.1%
Meat	-1.1%	-1.2%	-1.2%	-1.3%	-1.6%	-0.5%
VegOil	0.2%	-0.1%	-0.2%	-0.1%	-0.1%	-0.3%
Dairy	-0.7%	-0.7%	-0.8%	-1.0%	-1.4%	-0.7%
Food & Bev	-1.5%	-1.6%	-1.6%	-1.7%	-1.8%	-0.3%
Total Agri-VA	-6.0%	-7.6%	-8.3%	-9.0%	-10.9%	-4.9%

Source: CGE modelling calculations

The reduction of tariffs in Tunisia also has an effect on government revenues and, therefore, on the public balance. In contrast to standard CGE models, which keep trade, private and public balances constant, we show the changes associated with lower tariff revenues. Even though only agricultural products are subject to tariffs and quotas, the changes in tariffs are also relevant for the entire Tunisian economy. In the case of compliance cost and full tariff liberalisation (and modest quota change for olive oil), the Tunisian GDP falls by 1.9 %, with wages, profits and tax revenues all declining. In the case of partial liberalisation, GDP declines by 1.2 % (**Fehler! Verweisquelle konnte nicht gefunden werden.**). The decline in Tunisian imports relative to GDP is greater than the increase in exports, and the trade deficit (E-M) thus grows by 0.34 % relative to GDP in the case of partial liberalisation. On the other side, the public balance (G-T) increases (by +0.22 percentage points) relative to GDP, which reveals an increase in the public deficit due to lower tariff revenues and constant government spending. As the macroeconomic balances sum up to zero in every equilibrium, the deterioration in the private balance of investment minus savings (I-S) of 0.12 percentage points evens out the

changes in the two other balances. In the case of full liberalisation, the public deficit would increase by 0.59 percentage points relative to GDP. The overall effect on the public balance depends, however, also on the configuration of tariffs quotas.

Figure 8: Macroeconomic changes: partial tariff liberalisation and compliance costs



Source: CGE modelling calculations

Overall, the liberalisation of tariffs and quotas in the bilateral trade between Tunisia and the EU can only generate balancing effects for the burdensome regulatory adjustment for the Tunisian agri-food sectors if there is a substantial reduction on the EU side and only limited changes on the Tunisian side. This implies that the Tunisian side would have the option to exclude a large share of products from tariff reductions through a positive list or have only limited tariff reduction in all agri-food products. Further, the effects depend strongly on the potential benefits of eliminating the EU olive oil tariff quota. The actual benefits should be explicitly assessed when negotiating tariff reductions on the Tunisian side. The concentrated effects on specific sectors should facilitate a debate within the ALECA negotiations on excluding certain sectors and granting special treatment to the most sensitive sectors on the import side, respectively.

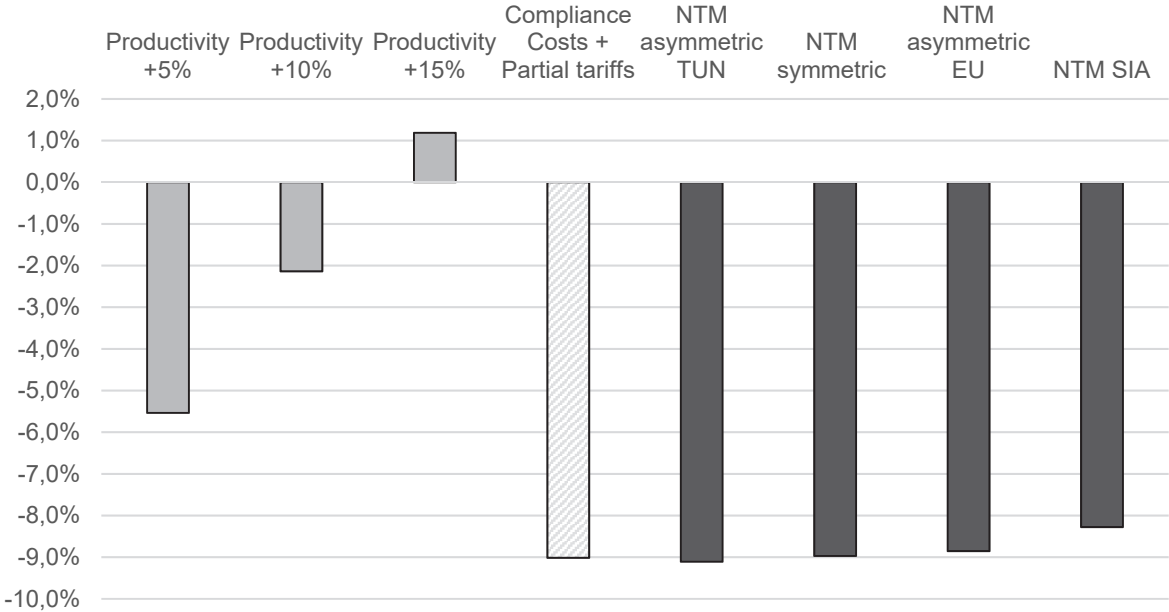
Scenario 3: Full market access

In the final scenario, we simulate changes in the productivity of the agricultural sector and in NTM trade costs which would be required to generate positive outcomes for the agricultural sectors compared to the baseline situation. These two variables are chosen as they are defined as drivers of welfare and other economic gains in standard CGE assessments. As productivity and NTM trade cost change have to counterbalance the burdens from compliance costs adjustments and tariff liberalisation, the results of the second scenario with partial Tunisian tariff reduction and modest EU olive oil quotas effects are used as a starting point for these simulations.

To begin with, labour productivity in the agricultural sectors is increased by 5 %, 10 % and 15 %, respectively. An increase in labour productivity in the agricultural sector by 5 % would

eliminate the effects of reduced labour productivity that emerge from changes in employment costs for compliance with EU regulations and private standards. However, Agri-VA is still -5.5 % below the base year (Figure 8, Table 14). Only if labour productivity increases by 15 % compared to the shock from compliance costs and tariff reductions is there a positive change in agricultural value added (+1.2 %). While value-added in sectors such as 'vegetables & fruits' and 'vegetable oils' would turn slightly positive, other sectors such as 'dairy', 'grains' or 'food & beverages' would still be negatively affected despite significantly higher labour productivity, as higher exports do not compensate for higher imports in these sectors.

Figure 8: Changes in Agri-Value Added from Productivity and NTM trade cost changes



Source: CGE modelling calculations

Between 2011 and 2020, Tunisian agriculture has indeed seen an unprecedentedly strong increase in labour productivity of 5.5 % per year with strong variations (ITCEQ 2020). This can be attributed to the increasing production of vegetables and olives, but also to a strong decline in employment by -1.6 % (ibid.). In absolute numbers, employment in the Tunisian agricultural sectors declined from 575,000 in 2010 to 505,000 persons, a reduction of more than 12 %, which has contributed to large migration movements within Tunisia (Chebbi et al. 2019). The simulated higher labour productivity generates a further decline in employment as fewer workers are needed to produce agricultural and food products. In the case of an increase in labour productivity of 5 %, employment (L) in the agricultural sectors 1 to 11 would decline by -4.9 % compared to the current situation, and a 15 % productivity growth would suppress employment by -7.9 % (Table 14). The labour force laid off from agricultural sectors would arguably increase the pressure to create new employment opportunities in other sectors.

Further, the potential positive effects of increasing labour productivity are generated through expanding exports to the EU, triggered by an improvement of relative prices. Thus, total output and exports in the major agricultural sectors 'vegetables & fruits' and 'vegetable oils' would have to increase drastically. In the case of olive oils, exports to the EU would more than double, thus requiring total output (X) of olives to increase by 12 % (see also Table A4 in Appendix for sectoral details). However, the production volumes of olives in Tunisia has been oscillating around an average of 800,000 tonnes a year since 1990 with stagnating yields (FAO n.d.). Over the same time period, the production volume of vegetables and fruits has doubled due to

higher yields and because of an expansion of the area under cultivation by 25 % (ibid.). These higher production volumes have been enabled by the use of irrigation systems, which use only 8 % of the agricultural area, but take up 80 % of available water resources in Tunisia to produce 37 % of agricultural production, in particular for exports (Chebbi et al. 2019). As Tunisian water resources are in danger of further depletion through climate change, any expansion of agricultural production has to include more efficient irrigation (UNECA 2015). This requires larger production units with higher capital investment, which would further accelerate job losses in the sector (ibid.).

Finally, it should be noted that we keep productivity in the EU agriculture unchanged because the positive effect from ALECA for Tunisian agriculture depends on an improvement of relative prices. Taking an increase of 20 % in labour productivity in the EU as an example, the positive effects in Tunisia could only be generated when productivity increases by 35 %, which would bring the expansion of agricultural production to its ecological limits and increase the pressure on other sectors to absorb the surplus labour force.

Table 14: Effects of Productivity and NTM trade cost changes on Agri-Sector

	Partial tariffs + CC	Productivity +5%	Productivity +10%	Productivity +15%	NTM asymmetric TUN	NTM symmetric	NTM asymmetric EU	NTM SIA
Agri-VA	-9.0%	-5.5%	-2.1%	1.2%	-9.1%	-9.0%	-8.9%	-8.3%
Agri-L	-3.3%	-4.9%	-6.4%	-7.9%	-3.4%	-3.2%	-3.1%	-2.5%
Agri-Con	-2.6%	-0.5%	1.6%	3.5%	-2.6%	-2.5%	-2.5%	-2.3%
Agri-Output	-0.9%	1.2%	3.2%	5.1%	-0.7%	-0.6%	-0.6%	0.5%
Agri-Exp	5.3%	11.6%	17.8%	24.1%	6.4%	7.6%	7.6%	15.3%
to EU	20.5%	27.3%	34.2%	41.1%	23.1%	25.8%	25.8%	44.1%
Agri-Imp	3.5%	3.4%	3.3%	3.3%	4.8%	5.0%	4.5%	7.6%
from EU	19.4%	18.9%	18.5%	18.2%	23.8%	23.9%	21.8%	29.6%

Source: CGE modelling calculations

In the next step, we investigate the effects of NTM trade cost reduction. As discussed above, these trade costs are linked to cost savings at the border and result from an alignment of standards. Defining these NTM trade costs as income-generating (see also Grumiller et al., 2018b), the NTM reductions are simulated for different constellations. Since NTM cost reductions through regulatory harmonisation occur on both sides, the effects of asymmetric and symmetric changes are considered. Firstly, NTM trade cost reductions are set to decline for Tunisian exports to the EU by 1 percentage point, while trade costs for EU exports to Tunisia decrease by 2 percentage points. Secondly, NTM trade costs are reduced by 2 percentage points on both sides and, thirdly, NTM trade cost are lowered to the advantage of Tunisia with a reduction of NTM costs of 2 percentage points for Tunisian exports to the EU and only 1 % for EU exports to Tunisia. Finally, the NTM trade cost reduction, as defined in the SIA for the EC (ECORYS 2013), is included, which decreases trade costs for Tunisian exports by 8 percentage points and for EU exports by 4 percentage points.

While the asymmetric case, to the disadvantage of Tunisia, creates a slightly larger decline in the agri-value added of 9.1 % compared to 9.0 % in the compliance cost scenario with partial

tariff liberalisation due to adverse changes in the trade balance, the symmetric case leaves the overall value-added in the agricultural sectors almost unchanged, while exports and imports expand. The decline in value-added in Tunisian agriculture can only be reduced when NTM trade costs decline more for Tunisian exports compared to EU exports. In particular, with a strong asymmetry in trade cost change to the advantage of Tunisia as in the EC SIA scenario, even doubling the trade cost effect is not sufficient to bring positive results for Tunisian agriculture as agricultural value-added would still decline by 8.3 %. Such a reduction in trade costs would again trigger an expansion of trade (Table 14) beyond the changes in the trade effects in the tariff scenarios.

Different constellations of NTM trade cost reductions have been assessed here, as it remains unclear by exactly how much trade costs would decline with facilitated border procedures or as to which partner would benefit more. In standard CGE models for the EC SIAs, it is typically assumed that cost savings are much stronger for the partner countries that export to the EU (ibid.; ECORYS 2012). However, the import regime of Tunisia can also be seen as burdensome for EU products as indicated by the UNCTAD TRAINS data [add an indication]. Thus, symmetric cost reductions can be considered as more relevant than a clear asymmetric cost reduction in favour of Tunisian exports. Further, standard CGE models show large welfare effects from NTM trade cost reductions by assuming efficiency gains from regulatory harmonisation that come at no cost and generate no income – the well-known, though problematic, “iceberg” – trade cost assumption (Raza et al. 2016a). In contrast, we emphasise in this study the effects of compliance with harmonised standards and consider the potential impact of productivity improvements. Given the complex nature of NTMs and their effects as discussed in the literature review in Chapters 2 and 3 above, we consider these to be highly relevant to the debate on DCFTAs in general, and specifically in terms of drawing appropriate policy recommendations.

5. INSTITUTIONAL IMPLEMENTATION CHALLENGES

In addition to the interviews with Tunisian companies in agricultural sectors, interviews were also conducted with the relevant government ministries¹⁴ in order to understand the regulatory and institutional challenges of regulatory approximation. In this section, we provide a review of the alignment processes towards EU SPS standards that have already started in parallel with the ALECA negotiations through other mechanisms such as EU loan conditionalities and twinning projects. Upon this basis, we will then assess the regulatory and institutional challenges of this alignment and, lastly, highlight implications of alignment to EU standards for the ALECA negotiations

5.1. Ongoing approximation of Tunisian regulations to EU SPS standards

As a member of the World Trade Organization (WTO) since 1995, Tunisia is committed to the WTO Agreement on Sanitary and Phytosanitary Measures (SPS Agreement), which provides a regulatory framework for the use of SPS standards in agricultural and food production.¹⁵ The WTO agreement favours the coordination of countries at the international level, notably by referring to established international standards such as the Codex Alimentarius, the World Organization for Animal Health (OIE), and the International Plant Protection Convention (IPPC). Thus, WTO member states are obliged to follow the recommendations, guidelines and SPS standards formulated within the framework of these international bodies when implementing their own SPS standards. However, they have the right to adopt more restrictive SPS standards to achieve a higher level of health protection for their consumers as long as they provide justification on the basis of scientific argument. Furthermore, the objective of the WTO SPS Agreement is to favour the equivalence approach over legislative approximation. In contrast to the approximation approach, which consists of incorporating the SPS measures of the other country with which the agreement is negotiated, the equivalence approach is based on the mutual acceptance of SPS standards, even if they are different, provided that the national system guarantees the same level of protection.

While the EU proposal on the SPS chapter for ALECA reaffirms the commitments made under the WTO SPS Agreement, it goes beyond these commitments by suggesting regulatory approximation to EU SPS standards (European Commission 2016). Article 6 of the EU's negotiating text proposal on SPS states: "*1. Tunisia shall progressively approximate its sanitary and phytosanitary regulations to the EU acquis. 2. The EU shall support Tunisia in the framework of cooperation for the approximation of legislation and capacity building particularly in the priority areas identified according to a program to be submitted to the SPS Subcommittee referred to in Article 16 of this Agreement, no later than one year after the entry into force of this Agreement. 3. The SPS Sub-Committee shall periodically monitor the implementation of the approximation program described in accordance with Annex II in order to provide necessary guidance and recommendations*".

The equivalence approach is proposed in Article 9 as a potential option: "*Equivalence may be recognized for individual measures and/or groups of measures and/or systems applicable to a sector or sub-sector. The recognition of equivalence shall be applied to facilitate trade in animals, plants and their products*". A mechanism for monitoring legislative approximation to the EU acquis is also provided under the proposed chapter. ALECA essentially adopts the same

¹⁴ Interviews were conducted with the Ministry of Agriculture, which is the responsible ministry for the ALECA negotiations on agriculture, in November 2019 and June 2020 and the Ministry of Trade in September 2020. The Ministry of Health did not respond to our request. Further information was gathered through the Agriculture Trade Union (UTAP), based on meetings with the National Authority for Food Safety and Quality and UTAP executives which took place on December 2020.

¹⁵ WTO Agreement on Sanitary and Phytosanitary Measures; see the committee's guidelines ([G/SPS/19/Rev.2](#))

principle as the EU accession policy, i.e., the harmonisation and integration of the *acquis communautaire* into national legislation in exchange for EU market access, although Tunisia is not granted the option of EU accession (see also section 1.3. and Chandoul 2017).

As a matter of fact, Tunisia has already entered into a process of regulatory approximation towards the EU on several levels. The EU is encouraging its neighbours to pursue progressive regulatory alignment through twinning projects and requirements for exporters and, in the case of Tunisia, as part of loan conditionalities within the framework of EU Macro-Financial Assistance (MFA) to Tunisia. These conditionalities are explicitly described as ‘trade-related’ reforms. In the evaluation of the first MFA to Tunisia for the European Commission, it is stated that “[s]ubstantial advancement with the process of converting the existing system of industrial compulsory standards (*normes homologuées*) into a system aligned with that of the EU (...) the government meant to submit to Parliament the law on security of industrial products and the law on food security. Both conditions intended to contribute to the effort of fostering trade relations between Tunisia and the EU, the objective that has been very high on the agenda of both partners given, inter alia, how critical trading partner has the European Community been for Tunisia. The conditions fed into the negotiations concerning ACAA and the subsequent one on the Deep and Comprehensive Free Trade Agreement (DCFTA) launched in October 2015” (Andruszkiewicz et al. 2019: 61).

The adoption of the Tunisian Law on Sanitary Safety (LSS) in February 2019, in which the Tunisian legislative framework is approximated through extensive transposition of EU Regulation n°178-2002 into Tunisian law, is thus driven by the MFA (Chandoul/Ben Rouine 2019). The process has already been advanced through a twinning project with the National Agency for Sanitary and Environmental Product Control (ANCSEP) under the supervision of the Ministry of Health, which ran from June 2015 to May 2017. Its first objective was the legislative approximation of Tunisia with the European Union in terms of SPS standards.¹⁶ The changes to the legislative and administrative framework of Tunisia generated by the new LSS also feed into the ongoing ALECA negotiations as they serve as the basis for further regulatory adjustments on a sectoral and product level.

A further example of the ongoing approximation with EU standards in Tunisia can be found in EU requirements for the import of products of animal origin, which indirectly implies regulatory alignment. This is the case for fish products, which are amongst the top 10 products exported from Tunisia to the EU (*Table 6*). These EU requirements go beyond requirements for exporters and include regulatory changes for the entire supply chain. Indeed, under the EU Health Certification requirements for fish product exporters, third countries have to guarantee that the exported products comply with the standards established by the respective EU regulations. All those in the supply chain, from the producers (fishermen, boats, aquaculture plants, etc.) to the exporting establishments, need to fulfil these requirements as a prerequisite to Tunisia gaining approval status from the EU. Before a country is granted approval and, thus, start to export a product of animal origin, the EU undertakes inspection missions to third countries to evaluate the status of compliance with the EU regulation. The requirements are not only for exporters but also for exporting country authorities. The regulatory requirement for non-EU countries is that they must have a residue monitoring plan which requires regulatory and institutional changes according to EU SPS standards¹⁷. The EU only permits imports from those

¹⁶ Programme d’Appui à l’Accord d’Association et à la Transition Tunisie-Union Européenne (P3A-T)
<http://www.ugp3a.gov.tn/Fr/upload/1420815023.pdf>

¹⁷ Before a country is approved and can start to export a category of food of animal origin, an evaluation of the country and its competent authority will be carried out by the Health and Food Audits and Analysis Office, located in Grange, Ireland (European Commission, Directorate General for Health and Food Safety). The requirements for each category of food products are specified in Annex III to the Regulation (EC) No 853/2004. These requirements must be checked and guaranteed by the competent authorities of the non-EU country before an establishment can be listed as an EU approved establishment. The non-EU country must have a residue monitoring plan (in accordance with Council Directive 96/23/EC) for the category of food

included in the EU list of approved countries (on which approved establishments are also listed). In 2019, Tunisia submitted to the European Commission¹⁸ a residue monitoring plan for aquaculture, fish products and poultry products, but only fish products were granted the necessary approval from the EU.

5.2. Challenges related to ongoing approximation efforts

Tunisian regulatory alignment to EU regulation will imply not only challenges for the private sector but also substantial institutional challenges. The LSS, adopted in February 2019, represents the first milestone towards establishing the basic structures for EU harmonisation. The law aims mainly to protect the health of consumers and involves all actors in the value chain of plant, animal and food products, whether exported, imported or for domestic consumption. In order to centralise and unify the SPS monitoring and control system, which is currently dispersed across several ministries – mainly those for Agriculture, Trade, Health and Industry – the law created a new institution, the National Authority for Food Safety and Quality (INSSPA), which is responsible for implementing SPS reform, for developing new standards and for centralising the SPS system. Following discussions in the Parliamentary Committee, this authority was placed under the exclusive supervision of the Ministry of Health. This was contrary to the provisions of the draft bill, which favoured joint supervision with the Ministry of Agriculture. The Ministry of Agriculture, for its part, had suggested that the new authority should be centralised under the Prime Minister, given the diffuse nature of expertise on SPS standards across multiple ministries. Based on the interviews conducted with the authorities, this new institutional architecture represents a critical challenge insofar as the responsibilities of the new authority, which include plant and animal health, currently lie within the mandate of the Ministry of Agriculture, namely the Veterinary Services Direction, which is responsible for monitoring and control of SPS standards for animal health (DGSA) and the Plant Health and Agricultural Inputs Direction, whose main mission is the monitoring and control of plant health and control of inputs (DGSVIA). Therefore, the expertise, experience, planning capacities and human resources involved in managing the SPS system are currently located within the Ministry of Agriculture (veterinarians, technicians, administrative and management staff at the Ministry's headquarters, regional offices and laboratories). This accounts for approximately 25 % of human resources at the Ministry of Agriculture¹⁹, and the transfer of these competences to the Ministry of Health requires substantial institutional and financial capacity.

The removal of the Ministry of Agriculture's co-supervision under the new LSS law is, thus, likely to lead to major institutional challenges in implementing the law. For instance, setting up thresholds and controlling maximum residue limits also involves organising and controlling the use of pesticides during the production phase (before monitoring products in the local market or at the borders for exports), improving production standards, supporting and training producers, providing input subsidies and dealing with the informal use of inputs, which are currently among the missions of the Ministry of Agriculture. Coordination is underway between the two ministries to clarify their respective roles and responsibilities and the resources that will be

of animal origin and must appear in the list of countries with an approved residue monitoring plan (Commission Decision 2011/163/EU as amended). As it is stipulated in the Directive 96/23/CE's Article 7: "*The initial plan shall (...) specify in particular: legislation on the use of the substances listed in Annex I and, in particular, provisions on their prohibition or authorization, distribution and placing on the market and the rules governing their administration, in so far as such legislation is not harmonized (...) the infrastructure of the relevant departments, a list of approved laboratories with details of their capacity for processing samples(...)*"

The competent authority is responsible for maintaining the lists of establishments and for informing the Commission of any changes necessary.

¹⁸ EU Decision 2020/1141 of 29 July 2020 amending Decision 2011/163/EU on the approval of residue monitoring plans submitted by third countries in accordance with Article 29 of Council Directive 96/23/EC: <https://op.europa.eu/fr/publication-detail/-/publication/baaa327c-d2f8-11ea-adf7-01aa75ed71a1>

¹⁹ Interview with the Ministry of Agriculture, November 2019

delegated to the new National Authority on Health Security. Interviews tended to suggest that the National Authority would monitor and control the downstream segments of the supply chain, i.e., the control of compliance with SPS standards in distribution channels and at land border entry points. However, it remains to be seen how the institutional reform will be implemented in practice – whether the authority will create new central and regional administrations, centralise existing administrations under its responsibility or seek to share responsibility with the Ministry of Agriculture.

This reform and its institutional changes will be costly. The institutional implementation of the LSS involves significant expense, whether institutional costs for public authorities, harmonisation costs for producers and exporters, and accreditation costs for laboratories. According to the interviews conducted, a comprehensive institutional cost assessment has not been carried out so far. According to the Ministry of Agriculture, there is no financial strategy regarding the implementation of the LSS. The only cost assessment carried out so far happened in 2015 and related to the reform under the EU-Ministry of Health twinning project (National Agency for the Sanitary and Environmental Control of Products – ANCEPS). The rehabilitation of 10 border control posts (10 of 27 existing posts) and the accreditation of the Ministry of Agriculture's four laboratories is estimated to be in the region of EUR 22 million²⁰.

Interview data suggests that the institutional implementation strategy will probably be implemented using existing human resources, including the total or partial transfer of current employees of the Ministry of Agriculture under the supervision of INSSPA in order to strengthen the capacity of this new authority. As for financing the reform, the financial needs will depend on the strategy adopted by the authorities, the ALECA negotiation process and other involved actors. As we have seen from the experiences of Eastern European countries, funding and capacity requirements for institutional reforms are substantial (see section 3).

As for the implementation process itself, several actors, including the Ministry of Agriculture and certain producers within the value chain, question the LSS implementation timeframe. The law stipulates a period of five years for laboratories to set up the accreditation system and a period of two years from the adoption of the law for producers to achieve the new standards.²¹ The implementation period given in the new LSS appears to be unrealistic, and the Ministry of Agriculture has suggested the Ministry of Health implement a 'transitional approach'. This approach would enable actors to jointly reflect on the requirements set out in the new law, with the aim of agreeing on an implementation strategy under the lead of INSSPA. The Director of INSSPA would be in charge of submitting an implementation and financing strategy as well as a realistic timetable over a period of 5 years or more, after which concrete measures could begin to be implemented. This transitional approach would include the revision of the current LSS to overcome these institutional challenges. INSSPA, whose role is to unify the SPS system and run the implementation process, has prioritised the reform of 'poultry', 'meat' and 'dairy' in the framework of the new SPS law.

5.3. Implications for ALECA negotiations

The current processes of regulatory approximation of SPS standards to the EU level could imply a potential pathway forward for further harmonisation in other parts of regulations in the agricultural sector, as envisioned in the ALECA proposals. However, the current challenges show the difficulties in the implementation of such reforms at the institutional level. The review of the first MFA for the European Commission also notes that actors expressed their concerns that the trade-related conditionalities "*may have been overly ambitious and there could have*

²⁰ Interview with the Ministry of Agriculture, December 2019

²¹ Article 93, Law on Sanitary Safety n°25-2019

been better alignment between the complexity of this reform, the suboptimal capacity of some Tunisian institutions and the challenging context...” and concludes that “...the Tunisian side may have been overly optimistic and overstated its capacity to implement the reform” (Andruszkiewicz et al. 2019: 61). However, the effective implementation of these regulatory changes is a prerequisite for enhanced market access to the EU. As has been shown in our review of the experience in Eastern European accession countries, even in the presence of substantial funds and support by the EU, it is ultimately local factors that determine the success of such a comprehensive reform process.

A further point in the discussion around ALECA relates to the issue of whether full alignment to EU standards would jeopardise a potential export diversification strategy as well as ignore context-specific challenges for the Tunisian SPS system. Harmonisation with EU standards could reduce the competitiveness of exporters to non-EU countries since EU norms are stricter and more costly, which could raise relative export prices and thus increase export dependence on the EU. It has been confirmed during an interview that the Ministry of Agriculture received a notification from the United States requesting more information on the LSS and threatening to resort to the WTO, should SPS standards be harmonised with EU standards.

The objective of LSS is to reform the SPS system governance, fill regulatory gaps and improve consumer protection. It contains several general provisions that must be specified by decree and involves changes in the institutional framework for SPS standards. According to the Ministry of Agriculture, an evaluation of the SPS system was undertaken in 2015, which had identified several legislative provisions to be improved and upgraded to international standards, in particular, Law No. 99-42 relating to seeds, seedlings and plant varieties and the Law 92-72 relating to the organisation of the protection of the plants as well as other regulatory gaps. While ministries recognise the necessity of reforming SPS standards and improving their governance, an alternative to harmonisation with EU standards is an upgrade of Tunisian SPS standards as part of a comprehensive reform of consumer safety, which would address specific national challenges without undermining export diversification potentials. Moreover, national authorities interviewed highlight that reforms in the agricultural sector would need to address challenges related to specificities of Tunisian agriculture, such as the lack of financial subsidies, weak monitoring and control capacities, difficult environmental conditions, the large role of subsistence agriculture and the informal economy, etc. As the general SPS provisions of the LSS have to be clarified through decrees, there is still room for manoeuvre and opportunities to pursue a reform that meets specific national needs and challenges. At the same time, the legislative framework could be used to support selected sectors, which mainly export to the EU. Some bills are currently being drafted, including those seeking to clarify the institutional framework and to fill regulatory gaps, such as regulation on maximum residue limits. Therefore, one of the central issues revolves around the standards to be implemented through law, whether in accordance with Tunisian, international or EU standards.

6. CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1. Conclusions

Under negotiation between Tunisia and the European Union since 2015, the ALECA agreement aims for a wide-reaching liberalisation of trade and investment to integrate Tunisia's economy further into the EU single market. The agreement would have multiple effects on agriculture in Tunisia, as one of the major sectors in terms of its contribution to GDP and employment. The effects derive from an ambitious liberalisation of tariffs and quotas and, most importantly, from the regulatory alignment of Tunisian agricultural standards to EU regulations.

Such regulatory adjustments are motivated by enhanced market access to the EU markets and the potential economic benefits for Tunisia in the long run, but the experience of Eastern European countries shows that the implementation of such regulatory adjustments is highly challenging, even with substantial financial support, and that the expected benefits are uncertain. A key challenge concerns the compliance costs for producers and public actors needing to adjust to the new regulations. A major conceptual, as well as policy-relevant problem with deep and comprehensive trade agreements such as ALECA, consists in the fact that these costs are either ignored or not fully accounted for in trade policy assessments.

By performing a systematic assessment of compliance costs, this study has taken an in-depth look at the wide-reaching implications of regulatory alignment of Tunisia to EU standards. Based on an empirical survey and simulations with the ÖFSE Global Trade Model, the results show that ALECA can lead to substantial adverse effects for Tunisian agriculture. Our analysis is based on different scenarios. Firstly, we simulate the effects of compliance costs for Tunisian producers to tighter EU regulations and to private standards demanded by EU buyers. Next, we interrelate these results with the effects of tariff and quota liberalisation. Lastly, we assess the impact of productivity changes and the reduction of NTM-related trade costs at the border.

Overall, the ALECA agreement generates a large adjustment burden for the agricultural sector, while the potential benefits from the agreement remain uncertain and will depend on the eventual success of a process of long-term structural transformation of the agricultural sector. Given the fragile economic and social situation in Tunisia, in particular in its rural areas, policymakers will need to carefully assess the economic as well as social costs and benefits of agricultural trade liberalisation.

Conclusion 1: Regulatory alignment leads to high adjustment costs for firms and governments

Standard impact assessments on the economic effects of DCFTAs typically suggest that changes to non-tariff measures (NTMs) are generally beneficial to participating trade partners. A critical review of the theoretical and empirical literature on NTMs shows, however, that the full effects of the adjustments of regulatory frameworks and standards are not yet well understood. This is related to the nature of regulatory measures, which have multiple impact channels on public policy goals, welfare, value addition, as well as trade flows. A simplified conceptualisation of NTMs as trade costs and foregone trade potentially excludes crucial beneficial effects of regulations, which are, for instance, related to correcting for market failures, the role of national preferences for the stability of regulatory frameworks, or to the trade-enhancing effects of NTMs (see Chapter 2).

A key aspect in the assessment of the effects of regulatory alignment, as business surveys regularly highlight, is the role of compliance costs that firms, as well as governments, have to bear so as to be able to export to the partner country. Only a few studies attempt to quantify

these compliance costs, but economic theory and empirical results show that compliance costs have an impact on the company structure within a sector exposed to trade liberalisation, as less competitive firms will eventually be forced out of the market by high compliance costs. An alignment of regulations by one party to the higher standards of the other party under a DCFTA can, thus, be considered to be economically equivalent to a one-sided liberalisation, which affects all producers in a sector. As assessments with standard CGE models typically focus on the trade-impeding and protectionist effects of NTMs, they tend to ignore these costs of adjustment and their related effects.

Conclusion 2: Harmonisation with EU regulations in Eastern European countries produced mixed results

The accession of several Central and Eastern European (CEE) countries to the EU in the 2000s and the Association Agreements (AAs) with Ukraine, Georgia and Moldova reached since 2007 provide important lessons for ALECA with respect to the effects of regulatory harmonisation and adjustment towards EU regulations (see Chapter 3).

The integration of CEE countries into the EU required full regulatory harmonisation with the EU legal system. Significant EU funding programmes supported the adjustment process by, in particular, the upgrading of state institutions and private actors to create the capacities to integrate these economies into the EU internal market. The outcomes in the agricultural and food sectors of the individual CEE countries after EU accession have, however, been highly uneven. While countries with sound institutional setups such as Poland and Hungary were in a better situation to manage the required process of agricultural modernisation, countries such as Romania and Bulgaria suffered from a difficult adjustment process with very mixed results on country and sectoral levels. In all countries, EU market integration expedited pronounced processes of structural transformation, which above all resulted in a reduction of agricultural employment. Thus, regulatory harmonisation is not a sufficient explanatory factor for successful economic integration, even when accompanied by strong financial support. Ultimately, success depends on effective domestic institutions and the political economy of partner countries.

In the case of the AAs, the regulatory approximation demanded by the agreements were supposed to be less demanding because, as is the case with Tunisia, there was no prospect of accession. Nevertheless, in order to gain access to the EU market, the actual adjustment in these countries was close to full harmonisation with respect to SPS and TBT measures in agricultural sectors. Even though the EU extended financial and technical support, implementation of regulatory alignment in these countries is slow and cumbersome both for companies and governments. While slow implementation restricts potential benefits on the export side, agricultural imports from the EU have increased since the agreements have come into force.

Conclusion 3: Our assessment of ALECA effects on Tunisian agriculture shows significant downside risks

Based on a company-level survey in Tunisia, we estimated compliance costs associated with regulatory adjustment of Tunisian exporters of agricultural and food products to the EU, identifying costs for employment, intermediate products and services as compliance-related expenses. Given that the ALECA agreement implies that all Tunisian producers have to adjust to new EU-like regulations before any can benefit from enhanced market access to the EU, we simulate the effects of regulatory adjustment in the Tunisian agricultural sectors.

Overall, the simulation results show that compliance costs emerging with the regulatory approximations envisioned by ALECA are a major challenge for the Tunisian agricultural sectors and the economy as a whole. Total compliance costs related to the implementation of ALECA

might cause a **decline of value-added in Tunisian agriculture by -8.3 %**. This is largely related to adjustments to **EU public regulations (value-added -6.5 %)** and partially to **private standards required by EU buyers (value-added -1.9 %)**. For the Tunisian economy as a whole, GDP shrinks by -1.0 % due to the changes in the agricultural and food sectors. Sectoral outcomes are most pronounced for those primarily serving the domestic market, such as 'meat' or 'dairy', although more export-oriented sectors such as 'vegetables & fruits' are also affected.

These effects are further magnified under bilateral tariff liberalisation, even if tariff rates in Tunisia were only reduced partially, e.g., by 50 %, **with an overall effect on agricultural value added by -9.0 %**. In a bilateral tariff liberalisation scenario, the removal of the existing EU quota on Tunisian olive oils will be essential for achieving a more balanced outcome for Tunisia. Tariff liberalisation will, however, reduce public revenues and harm the **public balance (up to 0.59 percentage points relative to GDP)** and, thus, put further constraints on an already difficult fiscal situation.

Positive effects from ALECA for Tunisian agriculture will require a strong comparative increase in agricultural productivity and/or a large and asymmetric reduction in NTM-related trade costs in order to compensate for the negative effects from the regulatory adjustment and tariff liberalisation. With a **productivity increase of 15 %** above EU productivity changes, **agricultural value-added would rise by 1.2 %**, while **employment would decline by 7.9 %**.

Productivity increases are, however, hard to achieve in the first place. Examples of harmonisation with EU regulations from the EU accession of CEE countries and EU-AAs with Ukraine, Moldova and Georgia (see Chapter 3) show that such effects have only been achieved in a few countries and sectors and that they require both time and substantial financial resources and support to farmers. Moreover, productivity increases, if achieved, come with other challenges. Firstly, employment in agricultural sectors would be further reduced. This increases the pressure on other sectors of the Tunisian economy to absorb the surplus workforce, which also depends on the effects of ALECA on non-agricultural sectors and the macroeconomic situation. Secondly, the potential for increased production volumes and exports are highly concentrated on the sectors 'vegetable oils' and 'vegetable & fruits'. Given the large dependence on irrigation systems, a strong increase in production might be limited by the availability of water resources and the capital investment required for modern irrigation systems. Also, NTM-related trade cost reductions due to facilitated border procedures will take time, as they are conditional on the successful implementation of regulatory alignment by private and public actors in Tunisia.

6.2. Policy Recommendations

The ALECA negotiations put further pressure on the long-standing principles of self-sufficiency, food security and income and price stabilisation in agricultural policies in Tunisia. The promised economic benefits of enhanced access to the EU market through regulatory approximation are challenged when considering the cost effects of all Tunisian producers having to comply with more stringent EU regulations. These adjustment processes are highly burdensome for the Tunisian agri-food sectors as a whole. The simulation outcomes show that key Tunisian sectors such as 'vegetables & fruits' and sectors serving primarily the domestic market such as 'meat' or 'dairy' and the related input sectors would be strongly affected.

These insights lead to several policy recommendations for Tunisia with respect to the ALECA negotiations and changes to the regulatory framework:

Assess implementation costs in a comprehensive and systematic manner: The complex effects of the ALECA agreement on Tunisian agriculture must be systematically assessed, with particular attention paid to the adjustment process and the related burdens for companies and

the public sector. The promised benefits from regulatory approximation cannot be taken for granted. Compliance costs for Tunisian producers will be substantial, and capacity-building in the public sector will require institutional and financial support. Even though EU funding could form part of this support, it is unlikely to compensate for all costs incurred.

Insist on highly asymmetric market opening: In the negotiations on tariff and quota reductions, the Tunisian government should insist on highly asymmetric market opening. The potential benefits from EU quota removal and the protection for agricultural products are crucial for balanced outcomes. In particular, the removal of the EU quota on Tunisian olive oil will be absolutely crucial in determining the short-term effect of the agreement on Tunisian exports. While a removal would facilitate the export of bottled olive oils with higher value-added, the overall benefits must also be weighed against the already high level of tariff-free above-quota exports under EU inward processing arrangements.

Avoid regulatory alignment on a broad scale and focus on export-oriented products: Regulatory changes in the direction of EU standards should be restricted to those agricultural products with clear export potential to the EU, such as olive oil, and selected products in the fish and 'vegetables & fruits' sector. In sectors oriented towards domestic consumption, the case for regulatory alignment to EU standards is weak, involving very high compliance costs and a change in company structure with potentially high social costs. Any adjustment to regulatory frameworks must take into account multiple aspects, including production and employment in domestic agriculture, food security, consumer protection. Any SPS reform with alignment to EU or any others standards should assess potential impacts on export opportunities to other markets. A strict adjustment to EU regulations for the entire agricultural sector would put some of these basic policy goals at risk.

Focus on increasing value-added of agricultural exports: Given the limited availability of water and stringent ecological constraints, the scope for quantitative increases of agricultural exports in the respective sectors, i.e., 'vegetable oils' and 'vegetables & fruits', are highly circumscribed, and, in addition, require major investment in modern irrigation systems and other productivity-enhancing measures. Export potentials will, thus, have to concentrate on increasing value-added in production by focusing on high-quality products yielding higher prices and profits on the EU market. As the EU quota on Tunisian olive oil is a particular impediment to the export of bottled olive oil, this makes the elimination of the oil quota all the more urgent.

Assess downside risks for agricultural smallholders: The downside risks of regulatory approximation, in particular for smallholders, must be taken seriously, and an assessment based on detailed data by type of producers is advisable once such data are available. Compliance costs will be difficult to bear for small producers, who will at the same time eventually face stronger import competition from the EU. Comprehensive agricultural policies and support tailored to the needs of small producers will be necessary for the sectors affected by regulatory alignment.

Strengthen institutional capacities of public regulators within a context-specific reform of SPS standards: The organisational and financial capacities and capabilities of public institutions to upgrade and meet the gaps related to the national SPS system in Tunisia should be strengthened. Regulatory reform must take into account the structural challenges and specific needs of Tunisian agriculture. In addition, public institutions should pay particular attention to supporting export companies in complying with the private standards demanded by EU buyers, as this represents an additional barrier for Tunisian producers seeking access to the EU market.

Define the role of trade liberalisation within a framework of sustainable agricultural development: The Tunisian negotiating position in the ALECA negotiations should be congruent to a strategic vision for the future of Tunisian agriculture, based upon a model of sustainable agriculture as set out by SDG 2 of the UN Sustainable Development Goals: “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”. The trade-offs between agricultural trade liberalisation and the goals demanded by SDG 2 should be well understood. Far-reaching liberalisation of agricultural trade will have substantial implications for the production structure and for policy goals such as self-sufficiency and food security. In particular, structural changes in agriculture triggered by regulatory adjustments, tariff liberalisation and potential productivity increases bear the risk of reduced employment. This will put pressure on other sectors of the Tunisian economy to absorb the surplus workforce and will increase rural-urban migration. Given the sensitive social and political situation in Tunisia, a circumspect approach to agricultural modernisation thus seems warranted.

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APPENDIX

Table A1: Sectoral Aggregation with GTAP sectors

Sector	GTAP Sectors
Grains	pdr wht gro pcr
Vegetables & Fruits	v_f
Oil Seeds	osd
Cattle	ctl
Animal Products	oap
Raw Milk	rmk
Fishing	fsk
Meat Processing	cmt
Vegetable Oils	omt
Dairy	mil
Food and Beverages	ofd b_t
Other Agriculture	c_b pfb ocr wol frs sgr
Chemicals	chm
Packing	rpp
Machinery	fmp ele eeq ome
Petro	p_c
Other Manufacturing	tex wap lea lum ppp bph nmm i_s nfm mvh otn omf ely gdt wtr
Business Services	obs
Other Services	cns trd afs otp wtp atp whs comn ofi ins rsa osg edu hht dwe
Extractive Industries	coa oil gas oxt

Table A2: Effects of Compliance Costs for Tunisian economy

	Compliance Costs	EU Regulations	Productivity EU	Chemicals EU	Services EU	Private Standards	Productivity Priv.	Packing Priv.	Services Priv.
GDP	-1.0%	-0.8%	-0.5%	-0.4%	0.0%	-0.2%	-0.1%	-0.1%	0.0%
VA	-1.2%	-0.9%	-0.5%	-0.4%	0.0%	-0.3%	-0.1%	-0.1%	0.0%
L	-0.5%	-0.4%	0.0%	-0.4%	0.0%	-0.1%	0.0%	-0.1%	0.0%
Con	-1.1%	-0.9%	-0.5%	-0.4%	0.0%	-0.2%	-0.1%	-0.1%	0.0%
Gov	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Inv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exp	-0.5%	-0.4%	-0.4%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%
Imp	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
PY	0.8%	0.6%	0.6%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%
PX	0.5%	0.4%	0.4%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
RER	-0.5%	-0.4%	-0.4%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%

Source: CGE modelling calculations

Table A3: Sectoral changes in TUN-EU trade by sector, tariff liberalisation scenarios

		Unilateral Tariff Liberalisation & CC		Unilateral Tariff Liberalisation (Olive Oil) & CC		Partial Tariff Liberalisation (Olive Oil) & CC		Full Tariff Liberalisation (Olive Oil) & CC	
		TUN Ex-ports to EU	TUN Imports from EU	TUN Ex-ports to EU	TUN Imports from EU	TUN Ex-ports to EU	TUN Imports from EU	TUN Ex-ports to EU	TUN Imports from EU
1	Grains	-3.9%	0.1%	-3.9%	-1.4%	-3.5%	27.8%	-3.1%	69.8%
2	Veg_Fruits	4.0%	1.4%	3.9%	0.7%	3.9%	18.0%	4.0%	40.1%
3	OilSeeds	-5.2%	22.4%	-5.3%	5.0%	-5.3%	33.3%	-5.3%	73.9%
4	Cattle	-8.5%	3.3%	-8.5%	2.8%	-8.3%	31.9%	-8.1%	75.3%
5	AnimalProd	-5.8%	1.8%	-5.8%	1.2%	-5.8%	16.0%	-5.8%	35.0%
6	RawMilk	-17.5%	18.6%	-17.5%	17.9%	-17.5%	17.8%	-17.5%	17.5%
7	Fishing	-5.1%	-3.4%	-5.1%	-4.3%	-5.0%	12.7%	-5.0%	36.2%
8	Meat	-21.0%	14.2%	-21.0%	13.6%	-20.8%	99.8%	-20.4%	280.5%
9	VegOil	248.6%	17.3%	71.3%	0.3%	71.3%	4.4%	71.4%	8.8%
10	Dairy	6.2%	-7.0%	6.2%	-7.5%	6.3%	37.6%	6.6%	111.9%
11	Food_Bev	0.7%	-6.5%	0.7%	-7.2%	0.8%	1.6%	0.8%	12.0%
	Total Agri	69.2%	-0.6%	20.4%	-2.7%	20.5%	19.4%	20.5%	51.5%

Source: CG modelling calculations

Table A4: Sectoral changes in selected variables scenario productivity +15%

Sectors	VA	L	Con	Exp	M	xi	Px	Py	w
1 Grains	-1.1%	-9.4%	1.5%	8.3%	9.3%	9.1%	-2.4%	-11.3%	-1.0%
2 Veg_Fruits	1.9%	-6.9%	5.4%	21.4%	-6.5%	9.5%	-7.5%	-11.4%	-0.7%
3 OilSeeds	15.8%	4.5%	2.6%	10.2%	5.1%	10.9%	-3.9%	-11.5%	0.4%
4 Cattle	3.3%	-5.8%	5.2%	16.3%	13.6%	9.6%	-7.3%	-11.4%	-0.6%
5 AnimalProd	4.8%	-4.5%	5.5%	11.0%	5.5%	9.8%	-7.7%	-11.4%	-0.5%
6 RawMilk	-0.7%	-9.0%	6.2%	38.5%	-28.3%	9.2%	-8.5%	-11.3%	-0.9%
7 Fishing	0.1%	-8.4%	4.7%	8.9%	5.8%	9.3%	-6.6%	-13.2%	-0.9%
8 Meat	2.5%	-6.4%	6.7%	48.0%	-14.1%	9.5%	-9.0%	-13.2%	-0.7%
9 VegOil	13.2%	-0.2%	1.8%	46.1%	4.0%	13.5%	-2.8%	-15.3%	0.0%
10 Dairy	-9.9%	-18.8%	2.7%	18.5%	10.5%	11.0%	-4.0%	-14.8%	-2.1%
11 Food_Bev	-2.0%	-11.5%	2.9%	10.7%	-4.8%	10.8%	-4.4%	-13.5%	-1.2%
12 Other Agriculture	0.6%	0.6%	0.0%	1.3%	2.3%	0.1%	-0.3%	0.0%	0.1%
13 Chemicals	2.7%	2.4%	-0.1%	0.4%	6.7%	0.3%	-0.2%	0.0%	0.2%
14 Packing	2.4%	2.2%	-0.2%	0.3%	3.7%	0.2%	-0.1%	0.0%	0.2%
15 Machinery	0.8%	0.7%	-0.2%	0.4%	0.4%	0.1%	-0.1%	0.0%	0.1%
16 Petro	0.9%	0.8%	-0.2%	0.1%	0.8%	0.1%	0.0%	0.0%	0.1%
17 Other Manufacturing	0.6%	0.6%	-0.2%	0.4%	0.2%	0.1%	-0.1%	0.0%	0.1%
18 Services	1.3%	1.2%	-0.2%	0.2%	7.5%	0.1%	-0.1%	0.0%	0.1%
19 Other Services	0.6%	0.6%	0.0%	0.8%	-0.1%	0.1%	-0.4%	0.0%	0.1%
20 Extractive Industries	1.2%	1.1%	-0.2%	0.7%	0.6%	0.1%	-0.1%	0.0%	0.1%

Source: CGE modelling calculations